



06/20/13

## Technical Report for

**Aquaterra Technologies, Inc.**

**Sun-Marcus Hook Refinery, Philadelphia, PA**

**AOI-5**

**Accutest Job Number: JB38711**

**Sampling Date: 06/04/13**



**Report to:**

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**Total number of pages in report: 266**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Nancy T. Cole".

**Nancy Cole  
Laboratory Director**

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.

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## Sample Summary

Aquaterra Technologies, Inc.

Job No: JB38711

Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JB38711-1	06/04/13	10:30 ED	06/04/13	SO	Soil	AOI5_MW-472_1-2_060413
JB38711-2	06/04/13	11:10 ED	06/04/13	SO	Soil	AOI5_MW-472_7-8_060413
JB38711-3	06/04/13	10:00 ED	06/04/13	SO	Soil	AOI5_MW-475_2-4'_060413
JB38711-4	06/04/13	14:30 ED	06/04/13	SO	Soil	AOI5_MW-471_0-2'_060413
JB38711-5	06/04/13	10:50 ED	06/04/13	SO	Soil	AOI5_MW-476_6-7

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Soil samples reported on a dry weight basis unless otherwise indicated on result page.



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** Aquaterra Technologies, Inc.

**Job No** JB38711

**Site:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Report Date** 6/20/2013 9:57:21 AM

On 06/04/2013, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB38711 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatile by GCMS By Method SW846 8260B

**Matrix:** SO

**Batch ID:** VA7375

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB38905-1MS, JB38905-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

**Matrix:** SO

**Batch ID:** VA7376

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB38564-4MS, JB38645-1DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GCMS By Method SW846 8270C

**Matrix:** SO

**Batch ID:** M:OP33547

- The data for SW846 8270C meets quality control requirements.
- JB38711-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-5: Analysis performed at Accutest Laboratories, Marlborough, MA.

### Volatile by GC By Method SW846 8011

**Matrix:** SO

**Batch ID:** M:OP33623

- The data for SW846 8011 meets quality control requirements.
- JB38711-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-3: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Metals By Method SW846 6010C

**Matrix:** SO

**Batch ID:** M:MP21154

- The data for SW846 6010C meets quality control requirements.
- JB38711-5 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-4 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-3 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-1 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-2 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Wet Chemistry By Method SM21 2540 B MOD.

**Matrix:** SO

**Batch ID:** M:GN43188

- The data for SM21 2540 B MOD. meets quality control requirements.
- JB38711-5 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-3 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-2 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-1 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38711-4 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest New Jersey

**Job No** JB38711

**Site:** AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Report Date** 6/19/2013 6:48:13 PM

5 Sample(s) were collected on 06/04/2013 and were received at Accutest of NJ on 06/04/2013, at Accutest of NE on 06/06/2013 properly preserved, at 3.2 Deg. C and intact. These Samples received an Accutest job number of JB38711. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Extractables by GCMS By Method SW846 8270C

<b>Matrix:</b> SO	<b>Batch ID:</b> OP33547
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC21507-2MS, MC21507-2MSD were used as the QC samples indicated.

### Volatiles by GC By Method SW846 8011

<b>Matrix:</b> SO	<b>Batch ID:</b> OP33623
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB38711-1MS, JB38711-1MSD were used as the QC samples indicated.
- JB38711-3,4 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

### Metals By Method SW846 6010C

<b>Matrix:</b> SO	<b>Batch ID:</b> MP21154
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- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC21383-16MSD, MC21383-16MS, MC21383-16SDL were used as the QC samples for metals.

### Wet Chemistry By Method SM21 2540 B MOD.

<b>Matrix:</b> SO	<b>Batch ID:</b> GN43188
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- Sample(s) MC21507-2DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JB38711).

**Summary of Hits**

Job Number: JB38711  
 Account: Aquaterra Technologies, Inc.  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
 Collected: 06/04/13

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB38711-1	AOI5_MW-472_1-2_060413					
Benzene	0.00064 J	0.00083	0.000099	mg/kg	SW846 8260B	
Toluene	0.00041 J	0.00083	0.000087	mg/kg	SW846 8260B	
Xylene (total)	0.00032 J	0.00083	0.00012	mg/kg	SW846 8260B	
Benzo(a)anthracene <sup>a</sup>	0.0335 J	0.11	0.015	mg/kg	SW846 8270C	
Benzo(a)pyrene <sup>a</sup>	0.0417 J	0.11	0.012	mg/kg	SW846 8270C	
Benzo(b)fluoranthene <sup>a</sup>	0.0425 J	0.11	0.014	mg/kg	SW846 8270C	
Benzo(g,h,i)perylene <sup>a</sup>	0.214	0.11	0.011	mg/kg	SW846 8270C	
Chrysene <sup>a</sup>	0.0559 J	0.11	0.014	mg/kg	SW846 8270C	
Phenanthrene <sup>a</sup>	0.0406 J	0.11	0.015	mg/kg	SW846 8270C	
Pyrene <sup>a</sup>	0.0544 J	0.11	0.013	mg/kg	SW846 8270C	
Lead <sup>a</sup>	170	0.99	0.17	mg/kg	SW846 6010C	
JB38711-2	AOI5_MW-472_7-8_060413					
Benzene	0.00049 J	0.0010	0.00012	mg/kg	SW846 8260B	
1,2,4-Trimethylbenzene	0.00037 J	0.0052	0.00022	mg/kg	SW846 8260B	
Lead <sup>a</sup>	4.2	0.99	0.17	mg/kg	SW846 6010C	
JB38711-3	AOI5_MW-475_2-4'_060413					
Lead <sup>a</sup>	8.5	0.96	0.16	mg/kg	SW846 6010C	
JB38711-4	AOI5_MW-471_0-2'_060413					
Benzo(a)pyrene <sup>a</sup>	0.0127 J	0.11	0.012	mg/kg	SW846 8270C	
Benzo(g,h,i)perylene <sup>a</sup>	0.0591 J	0.11	0.011	mg/kg	SW846 8270C	
Chrysene <sup>a</sup>	0.0208 J	0.11	0.014	mg/kg	SW846 8270C	
Phenanthrene <sup>a</sup>	0.0177 J	0.11	0.015	mg/kg	SW846 8270C	
Pyrene <sup>a</sup>	0.0272 J	0.11	0.013	mg/kg	SW846 8270C	
Lead <sup>a</sup>	326	0.99	0.17	mg/kg	SW846 6010C	
JB38711-5	AOI5_MW-476_6-7					
Benzene	0.00014 J	0.00093	0.00011	mg/kg	SW846 8260B	
Lead <sup>a</sup>	5.0	0.99	0.17	mg/kg	SW846 6010C	

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.



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## Sample Results

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## Report of Analysis

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Accutest Laboratories

## Report of Analysis

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Client Sample ID: AOI5\_MW-472\_1-2\_060413

Lab Sample ID: JB38711-1

Date Sampled: 06/04/13

Matrix: SO - Soil

Date Received: 06/04/13

Method: SW846 8260B

Percent Solids: 87.0

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A195501.D	1	06/09/13	OTR	n/a	n/a	VA7375
Run #2							

## Initial Weight

Run #1 6.9 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.00064	0.00083	0.000099	mg/kg	J
108-88-3	Toluene	0.00041	0.00083	0.000087	mg/kg	J
100-41-4	Ethylbenzene	ND	0.00083	0.00022	mg/kg	
1330-20-7	Xylene (total)	0.00032	0.00083	0.00012	mg/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.00083	0.00020	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00083	0.00011	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0042	0.000062	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0042	0.00017	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0042	0.00013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		65-131%
17060-07-0	1,2-Dichloroethane-D4	105%		70-121%
2037-26-5	Toluene-D8	104%		80-128%
460-00-4	4-Bromofluorobenzene	101%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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Client Sample ID: AOI5\_MW-472\_1-2\_060413

Lab Sample ID: JB38711-1

Date Sampled: 06/04/13

Matrix: SO - Soil

Date Received: 06/04/13

Method: SW846 8270C SW846 3546

Percent Solids: 87.0

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W12987.D	1	06/11/13	AMA	06/08/13	M:OP33547	M:MSW597
Run #2							

	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.11	0.014	mg/kg	
56-55-3	Benzo(a)anthracene	0.0335	0.11	0.015	mg/kg	J
50-32-8	Benzo(a)pyrene	0.0417	0.11	0.012	mg/kg	J
205-99-2	Benzo(b)fluoranthene	0.0425	0.11	0.014	mg/kg	J
191-24-2	Benzo(g,h,i)perylene	0.214	0.11	0.011	mg/kg	
218-01-9	Chrysene	0.0559	0.11	0.014	mg/kg	J
86-73-7	Fluorene	ND	0.11	0.015	mg/kg	
91-20-3	Naphthalene	ND	0.11	0.018	mg/kg	
85-01-8	Phenanthrene	0.0406	0.11	0.015	mg/kg	J
129-00-0	Pyrene	0.0544	0.11	0.013	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	54%		30-130%
321-60-8	2-Fluorobiphenyl	64%		30-130%
1718-51-0	Terphenyl-d14	72%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

**Report of Analysis**

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Client Sample ID: AOI5\_MW-472\_1-2\_060413

Lab Sample ID: JB38711-1

Date Sampled: 06/04/13

Matrix: SO - Soil

Date Received: 06/04/13

Method: SW846 8011 SW846 3550B

Percent Solids: 87.0

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	BK25936.D	1	06/15/13	AMA	06/14/13	M:OP33623	M:GBK894

	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	127%		61-167%
460-00-4	Bromofluorobenzene (S)	145%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

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**Client Sample ID:** AOI5\_MW-472\_1-2\_060413  
**Lab Sample ID:** JB38711-1  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 87.0

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	170	0.99	0.17	mg/kg	1	06/11/13	06/12/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15735

(2) Prep QC Batch: M:MP21154

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

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Client Sample ID: AOI5\_MW-472\_7-8\_060413

Lab Sample ID: JB38711-2

Date Sampled: 06/04/13

Matrix: SO - Soil

Date Received: 06/04/13

Method: SW846 8260B

Percent Solids: 75.6

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A195498.D	1	06/09/13	OTR	n/a	n/a	VA7375
Run #2							

## Initial Weight

Run #1 6.3 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.00049	0.0010	0.00012	mg/kg	J
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00028	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00015	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00025	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0052	0.000078	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00037	0.0052	0.00022	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	0.0052	0.00017	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		65-131%
17060-07-0	1,2-Dichloroethane-D4	102%		70-121%
2037-26-5	Toluene-D8	104%		80-128%
460-00-4	4-Bromofluorobenzene	102%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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Client Sample ID:	AOI5_MW-472_7-8_060413	Date Sampled:	06/04/13
Lab Sample ID:	JB38711-2	Date Received:	06/04/13
Matrix:	SO - Soil	Percent Solids:	75.6
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W12988.D	1	06/11/13	AMA	06/08/13	M:OP33547	M:MSW597

Run #1	Initial Weight	Final Volume
Run #1	20.2 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.13	0.016	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.13	0.017	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.13	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.13	0.016	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.13	0.013	mg/kg	
218-01-9	Chrysene	ND	0.13	0.016	mg/kg	
86-73-7	Fluorene	ND	0.13	0.017	mg/kg	
91-20-3	Naphthalene	ND	0.13	0.021	mg/kg	
85-01-8	Phenanthrene	ND	0.13	0.018	mg/kg	
129-00-0	Pyrene	ND	0.13	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	65%		30-130%
321-60-8	2-Fluorobiphenyl	71%		30-130%
1718-51-0	Terphenyl-d14	78%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI5\_MW-472\_7-8\_060413  
**Lab Sample ID:** JB38711-2  
**Matrix:** SO - Soil  
**Method:** SW846 8011 SW846 3550B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 06/04/13  
 Date Received: 06/04/13  
 Percent Solids: 75.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BK25928.D	1	06/15/13	AMA	06/14/13	M:OP33623	M:GBK894
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0032	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	126%		61-167%		
460-00-4	Bromofluorobenzene (S)	145%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

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**Client Sample ID:** AOI5\_MW-472\_7-8\_060413  
**Lab Sample ID:** JB38711-2  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 75.6

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	4.2	0.99	0.17	mg/kg	1	06/11/13	06/12/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15735

(2) Prep QC Batch: M:MP21154

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

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Client Sample ID:	AOI5_MW-475_2-4'_060413	Date Sampled:	06/04/13
Lab Sample ID:	JB38711-3	Date Received:	06/04/13
Matrix:	SO - Soil	Percent Solids:	84.2
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A195499.D	1	06/09/13	OTR	n/a	n/a	VA7375
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0052	0.000077	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0052	0.00022	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0052	0.00017	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		65-131%
17060-07-0	1,2-Dichloroethane-D4	104%		70-121%
2037-26-5	Toluene-D8	104%		80-128%
460-00-4	4-Bromofluorobenzene	102%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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4

Client Sample ID:	AOI5_MW-475_2-4'_060413	Date Sampled:	06/04/13
Lab Sample ID:	JB38711-3	Date Received:	06/04/13
Matrix:	SO - Soil	Percent Solids:	84.2
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W12989.D	1	06/11/13	AMA	06/08/13	M:OP33547	M:MSW597

Run #1	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.12	0.014	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.12	0.015	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.12	0.013	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.015	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.012	mg/kg	
218-01-9	Chrysene	ND	0.12	0.014	mg/kg	
86-73-7	Fluorene	ND	0.12	0.015	mg/kg	
91-20-3	Naphthalene	ND	0.12	0.019	mg/kg	
85-01-8	Phenanthrene	ND	0.12	0.016	mg/kg	
129-00-0	Pyrene	ND	0.12	0.014	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%		30-130%
321-60-8	2-Fluorobiphenyl	77%		30-130%
1718-51-0	Terphenyl-d14	85%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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Client Sample ID:	AOI5_MW-475_2-4'_060413	Date Sampled:	06/04/13
Lab Sample ID:	JB38711-3	Date Received:	06/04/13
Matrix:	SO - Soil	Percent Solids:	84.2
Method:	SW846 8011 SW846 3550B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BK25929.D	1	06/15/13	AMA	06/14/13	M:OP33623	M:GBK894
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.0011	mg/kg	
<b>CAS No.</b> <b>Surrogate Recoveries</b> <b>Run# 1</b> <b>Run# 2</b> <b>Limits</b>						
460-00-4	Bromofluorobenzene (S)	151%			61-167%	
460-00-4	Bromofluorobenzene (S)	170% <sup>b</sup>			61-167%	

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Outside control limits due to possible matrix interference.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

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**Client Sample ID:** AOI5\_MW-475\_2-4'\_060413  
**Lab Sample ID:** JB38711-3  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 84.2

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	8.5	0.96	0.16	mg/kg	1	06/11/13	06/12/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15735

(2) Prep QC Batch: M:MP21154

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

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Client Sample ID: AOI5\_MW-471\_0-2'\_060413

Lab Sample ID: JB38711-4

Date Sampled: 06/04/13

Matrix: SO - Soil

Date Received: 06/04/13

Method: SW846 8260B

Percent Solids: 87.2

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A195500.D	1	06/09/13	OTR	n/a	n/a	VA7375
Run #2							

## Initial Weight

Run #1 6.5 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.00088	0.00010	mg/kg	
108-88-3	Toluene	ND	0.00088	0.000093	mg/kg	
100-41-4	Ethylbenzene	ND	0.00088	0.00023	mg/kg	
1330-20-7	Xylene (total)	ND	0.00088	0.00012	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00088	0.00021	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00088	0.00012	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0044	0.000066	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0044	0.00018	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0044	0.00014	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		65-131%
17060-07-0	1,2-Dichloroethane-D4	103%		70-121%
2037-26-5	Toluene-D8	105%		80-128%
460-00-4	4-Bromofluorobenzene	102%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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Client Sample ID:	AOI5_MW-471_0-2'_060413	Date Sampled:	06/04/13
Lab Sample ID:	JB38711-4	Date Received:	06/04/13
Matrix:	SO - Soil	Percent Solids:	87.2
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W12990.D	1	06/11/13	AMA	06/08/13	M:OP33547	M:MSW597

Run #1	Initial Weight	Final Volume
Run #1	20.3 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.11	0.014	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.11	0.015	mg/kg	
50-32-8	Benzo(a)pyrene	0.0127	0.11	0.012	mg/kg	J
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.014	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0591	0.11	0.011	mg/kg	J
218-01-9	Chrysene	0.0208	0.11	0.014	mg/kg	J
86-73-7	Fluorene	ND	0.11	0.015	mg/kg	
91-20-3	Naphthalene	ND	0.11	0.018	mg/kg	
85-01-8	Phenanthrene	0.0177	0.11	0.015	mg/kg	J
129-00-0	Pyrene	0.0272	0.11	0.013	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	82%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI5\_MW-471\_0-2'\_060413  
**Lab Sample ID:** JB38711-4  
**Matrix:** SO - Soil  
**Method:** SW846 8011 SW846 3550B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 87.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BK25930.D	1	06/15/13	AMA	06/14/13	M:OP33623	M:GBK894
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	162%		61-167%		
460-00-4	Bromofluorobenzene (S)	187% <sup>b</sup>		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Outside control limits due to possible matrix interference.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

**Client Sample ID:** AOI5\_MW-471\_0-2'\_060413  
**Lab Sample ID:** JB38711-4  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 87.2

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method	
Lead <sup>a</sup>	326	0.99	0.17	mg/kg	1	06/11/13	06/12/13	AMA	SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15735

(2) Prep QC Batch: M:MP21154

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI5\_MW-476\_6-7  
**Lab Sample ID:** JB38711-5  
**Matrix:** SO - Soil  
**Method:** SW846 8260B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 77.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A195525.D	1	06/10/13	OTR	n/a	n/a	VA7376
Run #2							

	Initial Weight
Run #1	6.9 g
Run #2	

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	<b>0.00014</b>	0.00093	0.00011	mg/kg	J
108-88-3	Toluene	ND	0.00093	0.000098	mg/kg	
100-41-4	Ethylbenzene	ND	0.00093	0.00025	mg/kg	
1330-20-7	Xylene (total)	ND	0.00093	0.00013	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00093	0.00022	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00093	0.00013	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0047	0.000069	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0047	0.00019	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0047	0.00015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		65-131%
17060-07-0	1,2-Dichloroethane-D4	102%		70-121%
2037-26-5	Toluene-D8	105%		80-128%
460-00-4	4-Bromofluorobenzene	104%		67-131%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI5\_MW-476\_6-7  
**Lab Sample ID:** JB38711-5  
**Matrix:** SO - Soil  
**Method:** SW846 8270C SW846 3546  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 77.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W12991.D	1	06/11/13	AMA	06/08/13	M:OP33547	M:MSW597
Run #2							

	Initial Weight	Final Volume
Run #1	20.7 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.12	0.015	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.12	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.12	0.013	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.016	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.012	mg/kg	
218-01-9	Chrysene	ND	0.12	0.015	mg/kg	
86-73-7	Fluorene	ND	0.12	0.017	mg/kg	
91-20-3	Naphthalene	ND	0.12	0.020	mg/kg	
85-01-8	Phenanthrene	ND	0.12	0.017	mg/kg	
129-00-0	Pyrene	ND	0.12	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	59%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	72%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI5\_MW-476\_6-7  
**Lab Sample ID:** JB38711-5  
**Matrix:** SO - Soil  
**Method:** SW846 8011 SW846 3550B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 06/04/13  
**Date Received:** 06/04/13  
**Percent Solids:** 77.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BK25931.D	1	06/15/13	AMA	06/14/13	M:OP33623	M:GBK894
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0032	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	129%		61-167%		
460-00-4	Bromofluorobenzene (S)	145%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

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**Client Sample ID:** AOI5\_MW-476\_6-7  
**Lab Sample ID:** JB38711-5  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

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**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method	
Lead <sup>a</sup>	<b>5.0</b>	0.99	0.17	mg/kg	1	06/11/13	06/12/13	AMA	SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15735

(2) Prep QC Batch: M:MP21154

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# CHAIN OF CUSTODY

 PAGE 5 OF 1

 2235 Route 130, Dayton, NJ 08810  
 TEL. 732-329-0200 FAX: 732-329-3499/3480  
[www.accutest.com](http://www.accutest.com)

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)		Matrix Codes							
Company Name <b>AQUATELLA TECHNOLOGIES</b> Street Address <b>122 So Church Street</b> City      State      Zip <b>West Chester PA 19382</b>		Project Name: <b>MARCUS HOOK REFINERY ADT-5</b> Street <b></b> Billing Information (if different from Report to) Company Name <b></b>											
Project Contact <b>Tiffany Doer</b> Phone # <b></b>		E-mail <b></b> Fax # <b></b>		Project # <b></b> Client Purchase Order # <b></b>		Street Address <b></b> City      State      Zip <b></b>							
Sampler(s) Name(s) <b>Mike Mokryki &amp; Eric Diack</b>		Phone # <b></b>		Project Manager <b>Jim Oppenheim</b>		Attention: <b></b>							
Accutest Sample #  <b>1</b> <b>2</b> <b>3</b> <b>4</b> <b>5</b>		Field ID / Point of Collection  <b>ADT5-MW-472-1-2-060413</b> <b>ADT5-mw-472-7-8-060413</b> <b>ADT5-mw-475-24-060413</b> <b>ADT5-MW-471-0-2-060413</b> <b>ADT5-MW-476-6-7</b>		Collection  MEOH/DI/Vial #		Number of preserved Bottles  Date      Time      Sampled by      Matrix      # of bottles <b>6/14/13 1030 ED 50 5</b> <b>6/14/13 1110 ED 50 5</b> <b>6/14/13 1000 LM 50 5</b> <b>6/14/13 1930 LM 50 5</b> <b>6/14/13 1050 ED 50 5</b>							
								<b>HCl</b> <b>NaOH</b> <b>HNO3</b> <b>H2SO4</b> <b>NONE</b> <b>DI Water</b> <b>MEOH</b> <b>ENCORE</b>	<b>221</b> <b>221</b> <b>221</b> <b>221</b> <b>221</b>	<b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b>			
<b>SPECIMENS ATTACHED FOR ANALYSIS</b>													
Turnaround Time (Business days)		Data Deliverable Information				Comments / Special Instructions							
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____		Approved By (Accutest PM): / Date: <hr/> <hr/> <hr/> <hr/> <hr/>				<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input checked="" type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C"  Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data							
<b>Rec'd at Exton Service Center 6/14/13</b>													
<b>Sample Custody must be documented below each time samples change possession, including courier delivery.</b>													
Relinquished by Sampler: <b>1 Mike Mokryki</b> Relinquished by Sampler: <b>3 David Doer</b> Relinquished by: <b>5</b>		Date/Time: <b>6/14/13 1520</b>	Received By: <b>1</b>	Relinquished By: <b>2</b>	Date/Time: <b>6/14/13 1600</b>	Received By: <b>2</b>	Date/Time: <b>6/14/13 1825</b>	Received By: <b>3</b>	Received By: <b>4</b>	Custody Seal # <b>5</b>	Intact <input type="checkbox"/> Not intact <b>X</b>	Preserved where applicable <input type="checkbox"/> On Ice <b>X</b>	Cooler Temp. <b>3.0</b>

**JB38711: Chain of Custody**  
**Page 1 of 3**

JB38711

**Constituents of Concern for Soil  
Sunoco Philadelphia Refinery  
Philadelphia, Pennsylvania**

METALS	CAS No.	Method
Lead (total)	7439-92-1	SW846 6010B/C-LD

VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
1,2-Dichloroethane	107-06-2	
1,2,4-Trimethylbenzene	95-63-6	
1,3,5-Trimethylbenzene	108-67-8	
Benzene	71-43-2	
Cumene	98-82-8	
Ethylbenzene	100-41-4	SW846 8260B/C-LD
Methyl tert-butyl ether	103-40-4	
Toluene	108-88-3	
Xylenes (total)	1330-20-7	
Ethylene dibromide	106-93-4	SW846 8017-LD

SEMI-VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
Anthracene	120-12-7	
Benzolanthracene	56-55-3	
Benz (g,h,i) pentene	191-24-2	
Benzalpyrene	50-32-8	
Benzofluoranthene	205-99-2	
Chrysene	218-01-9	SW846 8270C/D-LD
Fluorene	86-73-7	
Naphthalene **	91-20-3	
Phenanthrene	85-01-8	
Ryrene	129-00-0	

## Notes:

As indicated by the "LD", all samples are to be analyzed using the lowest dilution possible.

\*\*For tank investigations, Naphthalene is to be run using analytical method SW846 8230 and should be appropriately marked on the chain of custody.

**JB38711: Chain of Custody  
Page 2 of 3**



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB38711

Client:

Project:

Date / Time Received: 6/4/2013

Delivery Method:

Airbill #'s:

Cooler Temps (Initial/Adjusted): #1: (3/3): 0

**Cooler Security**Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 1                                   |                          |

**Quality Control\_Preservatio**Y or N N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          |                                     |                          |

Intact

**Sample Integrity - Instructions**Y or N N/A

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            |

Comments

Accutest Laboratories  
V:732.329.02002235 US Highway 130  
F: 732.329.3499Dayton, New Jersey  
[www.accutest.com](http://www.accutest.com)**JB38711: Chain of Custody****Page 3 of 3**

Accutest Laboratories

## Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB38711

Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped By	Test Codes
JB38711-1	Collected: 04-JUN-13 10:30 By: ED	Received: 04-JUN-13 By: MN			
AOI5_MW-472_1-2_060413					
JB38711-1	SM21 2540 B MOD.	07-JUN-13	AMA		%SOL
JB38711-1	SW846 8260B	09-JUN-13 08:52	OTR		V8260SL
JB38711-1	SW846 8270C	11-JUN-13 02:53	AMA	08-JUN-13	AMA B8270SL
JB38711-1	SW846 6010C	12-JUN-13 11:15	AMA	11-JUN-13	AMA PB
JB38711-1	SW846 8011	15-JUN-13 12:32	AMA	14-JUN-13	AMA V8011EDB
JB38711-2	Collected: 04-JUN-13 11:10 By: ED	Received: 04-JUN-13 By: MN			
AOI5_MW-472_7-8_060413					
JB38711-2	SM21 2540 B MOD.	07-JUN-13	AMA		%SOL
JB38711-2	SW846 8260B	09-JUN-13 07:08	OTR		V8260SL
JB38711-2	SW846 8270C	11-JUN-13 03:18	AMA	08-JUN-13	AMA B8270SL
JB38711-2	SW846 6010C	12-JUN-13 11:19	AMA	11-JUN-13	AMA PB
JB38711-2	SW846 8011	15-JUN-13 09:28	AMA	14-JUN-13	AMA V8011EDB
JB38711-3	Collected: 04-JUN-13 10:00 By: ED	Received: 04-JUN-13 By: MN			
AOI5_MW-475_2-4'_060413					
JB38711-3	SM21 2540 B MOD.	07-JUN-13	AMA		%SOL
JB38711-3	SW846 8260B	09-JUN-13 07:38	OTR		V8260SL
JB38711-3	SW846 8270C	11-JUN-13 03:44	AMA	08-JUN-13	AMA B8270SL
JB38711-3	SW846 6010C	12-JUN-13 11:23	AMA	11-JUN-13	AMA PB
JB38711-3	SW846 8011	15-JUN-13 09:51	AMA	14-JUN-13	AMA V8011EDB
JB38711-4	Collected: 04-JUN-13 14:30 By: ED	Received: 04-JUN-13 By: MN			
AOI5_MW-471_0-2'_060413					
JB38711-4	SM21 2540 B MOD.	07-JUN-13	AMA		%SOL
JB38711-4	SW846 8260B	09-JUN-13 08:22	OTR		V8260SL
JB38711-4	SW846 8270C	11-JUN-13 04:09	AMA	08-JUN-13	AMA B8270SL
JB38711-4	SW846 6010C	12-JUN-13 11:28	AMA	11-JUN-13	AMA PB
JB38711-4	SW846 8011	15-JUN-13 10:13	AMA	14-JUN-13	AMA V8011EDB
JB38711-5	Collected: 04-JUN-13 10:50 By: ED	Received: 04-JUN-13 By: MN			
AOI5_MW-476_6-7					
JB38711-5	SM21 2540 B MOD.	07-JUN-13	AMA		%SOL

## Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB38711

Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB38711-5	SW846 8260B	10-JUN-13 19:03	OTR			V8260SL
JB38711-5	SW846 8270C	11-JUN-13 04:34	AMA	08-JUN-13	AMA	B8270SL
JB38711-5	SW846 6010C	12-JUN-13 11:32	AMA	11-JUN-13	AMA	PB
JB38711-5	SW846 8011	15-JUN-13 10:36	AMA	14-JUN-13	AMA	V8011EDB

## Accutest Internal Chain of Custody

Page 1 of 2

Job Number: JB38711  
Account: AQTAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 06/04/13

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38711-1.1	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-1.1	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-1.2	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-1.2	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-1.4	Secured Storage	Oksana Treglazova	06/07/13 15:28	Retrieve from Storage
JB38711-1.4	Oksana Treglazova	GCMSA	06/07/13 15:28	Load on Instrument
JB38711-1.4	GCMSA	Oksana Treglazova	06/10/13 15:33	Unload from Instrument
JB38711-1.4	Oksana Treglazova	Secured Storage	06/10/13 15:33	Return to Storage
JB38711-2.1	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-2.1	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-2.2	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-2.2	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-2.4	Secured Storage	Oksana Treglazova	06/07/13 15:28	Retrieve from Storage
JB38711-2.4	Oksana Treglazova	GCMSA	06/07/13 15:28	Load on Instrument
JB38711-2.4	GCMSA	Oksana Treglazova	06/10/13 15:33	Unload from Instrument
JB38711-2.4	Oksana Treglazova	Secured Storage	06/10/13 15:33	Return to Storage
JB38711-3.1	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-3.1	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-3.2	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-3.2	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-3.4	Secured Storage	Oksana Treglazova	06/07/13 15:28	Retrieve from Storage
JB38711-3.4	Oksana Treglazova	GCMSA	06/07/13 15:28	Load on Instrument
JB38711-3.4	GCMSA	Oksana Treglazova	06/10/13 15:33	Unload from Instrument
JB38711-3.4	Oksana Treglazova	Secured Storage	06/10/13 15:33	Return to Storage
JB38711-4.1	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-4.1	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-4.2	Secured Storage	Robert Lofrano	06/05/13 15:52	Retrieve from Storage
JB38711-4.2	Robert Lofrano		06/05/13 16:01	Subcontract
JB38711-4.4	Secured Storage	Oksana Treglazova	06/07/13 15:28	Retrieve from Storage
JB38711-4.4	Oksana Treglazova	GCMSA	06/07/13 15:28	Load on Instrument
JB38711-4.4	GCMSA	Oksana Treglazova	06/10/13 15:33	Unload from Instrument
JB38711-4.4	Oksana Treglazova	Secured Storage	06/10/13 15:33	Return to Storage

## Accutest Internal Chain of Custody

Page 2 of 2

Job Number: JB38711  
Account: AQTAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 06/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38711-5.1	Secured Storage Robert Lofrano	Robert Lofrano	06/05/13 15:52 06/05/13 16:01	Retrieve from Storage Subcontract
JB38711-5.2	Secured Storage Robert Lofrano	Robert Lofrano	06/05/13 15:52 06/05/13 16:01	Retrieve from Storage Subcontract
JB38711-5.4	Secured Storage Oksana Treglazova	Oksana Treglazova GCMSA	06/10/13 15:34 06/10/13 15:34	Retrieve from Storage Load on Instrument
JB38711-5.4	GCMSA	Oksana Treglazova	06/11/13 12:04	Unload from Instrument
JB38711-5.4	Oksana Treglazova	Secured Storage	06/11/13 12:04	Return to Storage



## GC/MS Volatiles

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### QC Data Summaries

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**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



**Method Blank Summary**

Job Number: JB38711  
 Account: AQTPAW Aquaterra Technologies, Inc.  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VA7375-MB	A195482.D	1	06/08/13	OTR	n/a	n/a	VA7375

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-1, JB38711-2, JB38711-3, JB38711-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109%
17060-07-0	1,2-Dichloroethane-D4	106%
2037-26-5	Toluene-D8	103%
460-00-4	4-Bromofluorobenzene	101%

**Method Blank Summary**

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VA7376-MB	A195515.D	1	06/10/13	OTR	n/a	n/a	VA7376

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	104%
17060-07-0	1,2-Dichloroethane-D4	99%
2037-26-5	Toluene-D8	103%
460-00-4	4-Bromofluorobenzene	102%

**Method Blank Summary**

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VA7376-MB2	A195537.D	1	06/11/13	OTR	n/a	n/a	VA7376

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38645-1DUP

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	105%
17060-07-0	1,2-Dichloroethane-D4	101%
2037-26-5	Toluene-D8	104%
460-00-4	4-Bromofluorobenzene	101%

**Blank Spike Summary**

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VA7375-BS	A195483.D	1	06/08/13	OTR	n/a	n/a	VA7375

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-1, JB38711-2, JB38711-3, JB38711-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.4	101	79-121
107-06-2	1,2-Dichloroethane	50	56.5	113	73-132
100-41-4	Ethylbenzene	50	47.0	94	78-119
98-82-8	Isopropylbenzene	50	47.8	96	75-122
1634-04-4	Methyl Tert Butyl Ether	100	108	108	73-122
108-88-3	Toluene	50	48.9	98	78-121
95-63-6	1,2,4-Trimethylbenzene	50	47.9	96	76-121
108-67-8	1,3,5-Trimethylbenzene	50	48.6	97	74-121
1330-20-7	Xylene (total)	150	151	101	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	65-131%
17060-07-0	1,2-Dichloroethane-D4	102%	70-121%
2037-26-5	Toluene-D8	105%	80-128%
460-00-4	4-Bromofluorobenzene	99%	67-131%

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VA7376-BS	A195521.D	1	06/10/13	OTR	n/a	n/a	VA7376

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	51.1	102	79-121
107-06-2	1,2-Dichloroethane	50	55.0	110	73-132
100-41-4	Ethylbenzene	50	48.4	97	78-119
98-82-8	Isopropylbenzene	50	49.6	99	75-122
1634-04-4	Methyl Tert Butyl Ether	100	101	101	73-122
108-88-3	Toluene	50	49.2	98	78-121
95-63-6	1,2,4-Trimethylbenzene	50	49.3	99	76-121
108-67-8	1,3,5-Trimethylbenzene	50	50.6	101	74-121
1330-20-7	Xylene (total)	150	155	103	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	65-131%
17060-07-0	1,2-Dichloroethane-D4	96%	70-121%
2037-26-5	Toluene-D8	102%	80-128%
460-00-4	4-Bromofluorobenzene	99%	67-131%

\* = Outside of Control Limits.

**Matrix Spike Summary**

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38564-4MS	A195531.D	1	06/10/13	OTR	n/a	n/a	VA7376
JB38564-4	A195526.D	1	06/10/13	OTR	n/a	n/a	VA7376

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-5

CAS No.	Compound	JB38564-4		Spike	MS	MS	Limits
		ug/kg	Q	ug/kg	ug/kg	%	
71-43-2	Benzene	ND	69	59.9	87	47-130	
107-06-2	1,2-Dichloroethane	ND	69	62.8	91	46-135	
100-41-4	Ethylbenzene	ND	69	59.6	86	30-139	
98-82-8	Isopropylbenzene	ND	69	61.5	89	30-140	
1634-04-4	Methyl Tert Butyl Ether	63.1	69	114	74	50-127	
108-88-3	Toluene	ND	69	60.9	88	38-136	
95-63-6	1,2,4-Trimethylbenzene	ND	69	59.1	86	20-145	
108-67-8	1,3,5-Trimethylbenzene	ND	69	62.8	91	24-142	
1330-20-7	Xylene (total)	ND	207	189	91	31-140	

CAS No.	Surrogate Recoveries	MS	JB38564-4	Limits
1868-53-7	Dibromofluoromethane	99%	105%	65-131%
17060-07-0	1,2-Dichloroethane-D4	85%	97%	70-121%
2037-26-5	Toluene-D8	102%	103%	80-128%
460-00-4	4-Bromofluorobenzene	100%	103%	67-131%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38905-1MS	A195484.D	1	06/08/13	OTR	n/a	n/a	VA7375
JB38905-1MSD	A195485.D	1	06/09/13	OTR	n/a	n/a	VA7375
JB38905-1	A195487.D	1	06/09/13	OTR	n/a	n/a	VA7375

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-1, JB38711-2, JB38711-3, JB38711-4

CAS No.	Compound	JB38905-1		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
71-43-2	Benzene	0.25		58.5	55.9	95	54.9	93	2	47-130/22
107-06-2	1,2-Dichloroethane	ND		58.5	57.4	98	56.6	97	1	46-135/21
100-41-4	Ethylbenzene	0.45		58.5	53.2	90	53.0	90	0	30-139/25
98-82-8	Isopropylbenzene	ND		58.5	54.9	94	55.2	94	1	30-140/27
1634-04-4	Methyl Tert Butyl Ether	ND		58.5	53.9	92	51.9	89	4	50-127/21
108-88-3	Toluene	ND		58.5	54.6	93	53.7	92	2	38-136/24
95-63-6	1,2,4-Trimethylbenzene	0.30		58.5	52.4	89	53.4	91	2	20-145/28
108-67-8	1,3,5-Trimethylbenzene	0.23		58.5	54.9	93	55.8	95	2	24-142/28
1330-20-7	Xylene (total)	ND		175	169	96	169	96	0	31-140/26

CAS No.	Surrogate Recoveries	MS	MSD	JB38905-1	Limits
1868-53-7	Dibromofluoromethane	105%	100%	100%	65-131%
17060-07-0	1,2-Dichloroethane-D4	91%	86%	90%	70-121%
2037-26-5	Toluene-D8	104%	103%	104%	80-128%
460-00-4	4-Bromofluorobenzene	100%	100%	100%	67-131%

\* = Outside of Control Limits.

6.4.1

**Duplicate Summary**

Job Number: JB38711  
 Account: AQTAW Aquaterra Technologies, Inc.  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38645-1DUP	A195550.D	1	06/11/13	OTR	n/a	n/a	VA7376
JB38645-1	A195538.D	1	06/11/13	OTR	n/a	n/a	VA7376

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38711-5

CAS No.	Compound	JB38645-1		DUP	RPD	Limits
		ug/kg	Q	ug/kg		
71-43-2	Benzene	ND		ND	nc	20
107-06-2	1,2-Dichloroethane	ND		ND	nc	10
100-41-4	Ethylbenzene	ND		ND	nc	19
98-82-8	Isopropylbenzene	ND		ND	nc	15
1634-04-4	Methyl Tert Butyl Ether	ND		ND	nc	16
108-88-3	Toluene	ND		ND	nc	24
95-63-6	1,2,4-Trimethylbenzene	ND		ND	nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND	nc	10
1330-20-7	Xylene (total)	ND		ND	nc	24

CAS No.	Surrogate Recoveries	DUP	JB38645-1	Limits
1868-53-7	Dibromofluoromethane	108%	108%	65-131%
17060-07-0	1,2-Dichloroethane-D4	108%	101%	70-121%
2037-26-5	Toluene-D8	102%	103%	80-128%
460-00-4	4-Bromofluorobenzene	115%	104%	67-131%

\* = Outside of Control Limits.

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VA7347-BFB	Injection Date:	05/17/13
Lab File ID:	A194755.D	Injection Time:	11:11
Instrument ID:	GCMSA		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	14.95 - 40.0% of mass 95	9667	17.6	Pass
75	30.0 - 60.0% of mass 95	24315	44.3	Pass
95	Base peak, 100% relative abundance	54848	100.0	Pass
96	5.0 - 9.0% of mass 95	3620	6.60	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	47544	86.7	Pass
175	5.0 - 9.0% of mass 174	3567	6.50	(7.50) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	46005	83.9	(96.8) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3051	5.56	(6.63) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VA7347-IC7347	A194757.D	05/17/13	12:13	01:02	Initial cal 1
VA7347-IC7347	A194758.D	05/17/13	12:42	01:31	Initial cal 2
VA7347-IC7347	A194759.D	05/17/13	13:12	02:01	Initial cal 5
VA7347-IC7347	A194760.D	05/17/13	13:56	02:45	Initial cal 10
VA7347-IC7347	A194761.D	05/17/13	14:26	03:15	Initial cal 20
VA7347-ICC7347	A194762.D	05/17/13	14:51	03:40	Initial cal 50
VA7347-IC7347	A194763.D	05/17/13	15:20	04:09	Initial cal 100
VA7347-IC7347	A194764.D	05/17/13	15:55	04:44	Initial cal 200
VA7347-IC7347	A194767.D	05/17/13	17:30	06:19	Initial cal 0.5
VA7347-ICV7347	A194768.D	05/17/13	18:12	07:01	Initial cal verification 50
VA7347-ICV7347	A194768A.D	05/17/13	19:04	07:53	Initial cal verification 50
VA7347-MB	A194768B.D	05/17/13	19:32	08:21	Method Blank
ZZZZZZ	A194769.D	05/17/13	20:02	08:51	(unrelated sample)
ZZZZZZ	A194769A.D	05/17/13	20:31	09:20	(unrelated sample)
ZZZZZZ	A194769B.D	05/17/13	21:01	09:50	(unrelated sample)
ZZZZZZ	A194770.D	05/17/13	21:30	10:19	(unrelated sample)

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VA7375-BFB	Injection Date:	06/08/13
Lab File ID:	A195479.D	Injection Time:	21:02
Instrument ID:	GCMSA		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	14.95 - 40.0% of mass 95	10556	18.6	Pass
75	30.0 - 60.0% of mass 95	25861	45.6	Pass
95	Base peak, 100% relative abundance	56723	100.0	Pass
96	5.0 - 9.0% of mass 95	3887	6.85	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	46301	81.6	Pass
175	5.0 - 9.0% of mass 174	3486	6.15	(7.53) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	44235	78.0	(95.5) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3019	5.32	(6.82) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VA7375-CC7347	A195480.D	06/08/13	21:32	00:30	Continuing cal 50
VA7375-MB	A195482.D	06/08/13	22:31	01:29	Method Blank
VA7375-BS	A195483.D	06/08/13	23:15	02:13	Blank Spike
JB38905-1MS	A195484.D	06/08/13	23:45	02:43	Matrix Spike
JB38905-1MSD	A195485.D	06/09/13	00:14	03:12	Matrix Spike Duplicate
JB38905-1	A195487.D	06/09/13	01:14	04:12	(used for QC only; not part of job JB38711)
ZZZZZZ	A195488.D	06/09/13	01:43	04:41	(unrelated sample)
ZZZZZZ	A195489.D	06/09/13	02:27	05:25	(unrelated sample)
ZZZZZZ	A195490.D	06/09/13	02:57	05:55	(unrelated sample)
ZZZZZZ	A195491.D	06/09/13	03:27	06:25	(unrelated sample)
ZZZZZZ	A195492.D	06/09/13	03:56	06:54	(unrelated sample)
ZZZZZZ	A195493.D	06/09/13	04:26	07:24	(unrelated sample)
ZZZZZZ	A195494.D	06/09/13	04:55	07:53	(unrelated sample)
ZZZZZZ	A195495.D	06/09/13	05:40	08:38	(unrelated sample)
ZZZZZZ	A195496.D	06/09/13	06:09	09:07	(unrelated sample)
ZZZZZZ	A195497.D	06/09/13	06:39	09:37	(unrelated sample)
JB38711-2	A195498.D	06/09/13	07:08	10:06	AOI5_MW-472_7-8_060413
JB38711-3	A195499.D	06/09/13	07:38	10:36	AOI5_MW-475_2-4'_060413
JB38711-4	A195500.D	06/09/13	08:22	11:20	AOI5_MW-471_0-2'_060413
JB38711-1	A195501.D	06/09/13	08:52	11:50	AOI5_MW-472_1-2_060413

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VA7376-BFB	Injection Date:	06/10/13
Lab File ID:	A195512.D	Injection Time:	11:30
Instrument ID:	GCMSA		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	14.95 - 40.0% of mass 95	7631	16.5	Pass
75	30.0 - 60.0% of mass 95	20629	44.7	Pass
95	Base peak, 100% relative abundance	46157	100.0	Pass
96	5.0 - 9.0% of mass 95	3015	6.53	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	39168	84.9	Pass
175	5.0 - 9.0% of mass 174	2922	6.33	(7.46) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	37875	82.1	(96.7) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	2544	5.51	(6.72) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VA7376-CC7347	A195513.D	06/10/13	12:13	00:43	Continuing cal 20
VA7376-MB	A195515.D	06/10/13	13:24	01:54	Method Blank
VA7376-BS	A195521.D	06/10/13	16:50	05:20	Blank Spike
ZZZZZZ	A195523.D	06/10/13	17:49	06:19	(unrelated sample)
JB38711-5	A195525.D	06/10/13	19:03	07:33	AOI5_MW-476_6-7
JB38564-4	A195526.D	06/10/13	19:33	08:03	(used for QC only; not part of job JB38711)
ZZZZZZ	A195527.D	06/10/13	20:02	08:32	(unrelated sample)
ZZZZZZ	A195528.D	06/10/13	20:32	09:02	(unrelated sample)
ZZZZZZ	A195529.D	06/10/13	21:16	09:46	(unrelated sample)
JB38564-4MS	A195531.D	06/10/13	22:15	10:45	Matrix Spike

**Instrument Performance Check (BFB)**

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VA7376-BFB	Injection Date:	06/10/13
Lab File ID:	A195534.D	Injection Time:	23:59
Instrument ID:	GCMSA		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	14.95 - 40.0% of mass 95	8576	17.5	Pass
75	30.0 - 60.0% of mass 95	21720	44.2	Pass
95	Base peak, 100% relative abundance	49088	100.0	Pass
96	5.0 - 9.0% of mass 95	3377	6.88	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	40984	83.5	Pass
175	5.0 - 9.0% of mass 174	3116	6.35	(7.60) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	40523	82.6	(98.9) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	2683	5.47	(6.62) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VA7376-CC7347	A195535.D	06/11/13	00:28	00:29	Continuing cal 50
VA7376-MB2	A195537.D	06/11/13	01:28	01:29	Method Blank
JB38645-1	A195538.D	06/11/13	01:57	01:58	(used for QC only; not part of job JB38711)
ZZZZZZ	A195539.D	06/11/13	02:42	02:43	(unrelated sample)
ZZZZZZ	A195540.D	06/11/13	03:11	03:12	(unrelated sample)
ZZZZZZ	A195542.D	06/11/13	04:10	04:11	(unrelated sample)
ZZZZZZ	A195543.D	06/11/13	04:40	04:41	(unrelated sample)
ZZZZZZ	A195544.D	06/11/13	05:24	05:25	(unrelated sample)
ZZZZZZ	A195545.D	06/11/13	05:54	05:55	(unrelated sample)
ZZZZZZ	A195546.D	06/11/13	06:23	06:24	(unrelated sample)
ZZZZZZ	A195547.D	06/11/13	06:53	06:54	(unrelated sample)
ZZZZZZ	A195549.D	06/11/13	07:56	07:57	(unrelated sample)
JB38645-1DUP	A195550.D	06/11/13	08:33	08:34	Duplicate

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VA7375-CC7347	Injection Date:	06/08/13
Lab File ID:	A195480.D	Injection Time:	21:32
Instrument ID:	GCMSA	Method:	SW846 8260B

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	RT
VA7375-MB	79878	7.56	197729	9.90	313409	10.86
VA7375-BS	75213	7.55	201817	9.90	318796	10.86
JB38905-1MS	51868	7.55	208275	9.90	324385	10.86
JB38905-1MSD	58375	7.56	211224	9.90	319852	10.86
JB38905-1	69094	7.55	217597	9.90	330491	10.86
ZZZZZZ	83337	7.56	219765	9.90	339757	10.86
ZZZZZZ	79657	7.55	219254	9.90	337183	10.86
ZZZZZZ	86964	7.55	215359	9.90	337566	10.86
ZZZZZZ	77189	7.56	214712	9.90	335313	10.86
ZZZZZZ	86523	7.56	210439	9.90	334760	10.86
ZZZZZZ	78399	7.56	212398	9.90	338389	10.86
ZZZZZZ	76870	7.56	207642	9.90	329534	10.86
ZZZZZZ	77562	7.55	205826	9.90	329473	10.85
ZZZZZZ	86890	7.55	197139	9.90	321752	10.85
ZZZZZZ	80033	7.55	199008	9.90	319123	10.85
JB38711-2	75397	7.55	204453	9.89	327433	10.85
JB38711-3	75911	7.55	203282	9.89	323812	10.85
JB38711-4	79660	7.56	201085	9.89	317750	10.85
JB38711-1	73465	7.55	203710	9.89	328758	10.85

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VA7376-CC7347	Injection Date:	06/10/13
Lab File ID:	A195513.D	Injection Time:	12:13
Instrument ID:	GCMSA	Method:	SW846 8260B

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	66473	7.56	164092	9.89	254592	10.86	236727	14.30	126314	16.93
Upper Limit <sup>a</sup>	132946	8.06	328184	10.39	509184	11.36	473454	14.80	252628	17.43
Lower Limit <sup>b</sup>	33237	7.06	82046	9.39	127296	10.36	118364	13.80	63157	16.43

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT
VA7376-MB	58032	7.55	160403	9.90	253781	10.86	233989	14.30	120083	16.93
VA7376-BS	58784	7.57	167152	9.91	262942	10.86	240696	14.30	127738	16.94
ZZZZZZ	76646	7.57	171535	9.90	270488	10.86	250319	14.31	129957	16.94
JB38711-5	65637	7.57	174127	9.91	272348	10.87	256031	14.31	130361	16.94
JB38564-4	62920	7.57	170611	9.91	269535	10.87	248088	14.31	126326	16.94
ZZZZZZ	52625	7.57	139996	9.91	222539	10.87	207240	14.31	108545	16.94
ZZZZZZ	60459	7.57	178043	9.91	267789	10.87	246796	14.31	130310	16.94
ZZZZZZ	58617	7.56	179706	9.91	277561	10.87	252677	14.31	132111	16.94
JB38564-4MS	50799	7.57	181483	9.91	272142	10.87	252957	14.31	133917	16.94

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VA7376-CC7347	Injection Date:	06/11/13
Lab File ID:	A195535.D	Injection Time:	00:28
Instrument ID:	GCMSA	Method:	SW846 8260B

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	62143	7.57	172545	9.91	266900	10.88	246774	14.32	130777	16.95
Upper Limit <sup>a</sup>	124286	8.07	345090	10.41	533800	11.38	493548	14.82	261554	17.45
Lower Limit <sup>b</sup>	31072	7.07	86273	9.41	133450	10.38	123387	13.82	65389	16.45

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT
VA7376-MB2	65022	7.57	169182	9.91	261083	10.87	246682	14.32	128315	16.95
JB38645-1	69281	7.57	179553	9.91	282466	10.87	262964	14.32	131633	16.95
ZZZZZZ	64494	7.57	178140	9.92	277744	10.88	257441	14.32	130733	16.95
ZZZZZZ	70429	7.57	177314	9.91	280742	10.87	258237	14.32	129514	16.95
ZZZZZZ	69370	7.57	177726	9.91	282066	10.87	261640	14.31	131637	16.95
ZZZZZZ	69382	7.58	174054	9.91	276283	10.87	255213	14.32	128342	16.95
ZZZZZZ	82184	7.57	175736	9.91	282021	10.87	266391	14.32	138687	16.95
ZZZZZZ	64317	7.58	173440	9.91	275046	10.87	253958	14.31	128991	16.95
ZZZZZZ	66768	7.57	175906	9.91	277903	10.87	257254	14.32	128382	16.95
ZZZZZZ	68393	7.57	179093	9.92	282751	10.87	260474	14.32	133960	16.95
ZZZZZZ	59833	7.58	176904	9.92	284470	10.87	257682	14.31	130765	16.95
JB38645-1DUP	74353	7.58	174023	9.91	274757	10.87	243284	14.32	103478	16.95

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38711

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8260B

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB38711-1	A195501.D	108.0	105.0	104.0	101.0
JB38711-2	A195498.D	108.0	102.0	104.0	102.0
JB38711-3	A195499.D	109.0	104.0	104.0	102.0
JB38711-4	A195500.D	100.0	103.0	105.0	102.0
JB38711-5	A195525.D	107.0	102.0	105.0	104.0
JB38564-4MS	A195531.D	99.0	85.0	102.0	100.0
JB38645-1DUP	A195550.D	108.0	108.0	102.0	115.0
JB38905-1MS	A195484.D	105.0	91.0	104.0	100.0
JB38905-1MSD	A195485.D	100.0	86.0	103.0	100.0
VA7375-BS	A195483.D	107.0	102.0	105.0	99.0
VA7375-MB	A195482.D	109.0	106.0	103.0	101.0
VA7376-BS	A195521.D	104.0	96.0	102.0	99.0
VA7376-MB	A195515.D	104.0	99.0	103.0	102.0
VA7376-MB2	A195537.D	105.0	101.0	104.0	101.0

Surrogate  
Compounds

Recovery  
Limits

S1 = Dibromofluoromethane  
S2 = 1,2-Dichloroethane-D4  
S3 = Toluene-D8  
S4 = 4-Bromofluorobenzene

65-131%  
70-121%  
80-128%  
67-131%

6.8.1  
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**Initial Calibration Summary**

Job Number: JB38711

Sample: VA7347-ICC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194762.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSA

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)

Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um

Last Update : Fri May 17 17:59:16 2013

Response via : Initial Calibration

## Calibration Files

5	=A194759.D	2	=A194758.D	20	=A194761.D	50	=A194762.D
100	=A194763.D	1	=A194757.D	200	=A194764.D	0.5	=A194767.D
10	=A194760.D		=				

## Compound

	5	2	20	50	100	1	200	0.5	10	Avg	%RSD
<hr/>											
1) I Tert Butyl Alcohol-d9							-----ISTD-----				
2) 1,4-dioxane	0.096	0.089	0.097	0.092	0.099		0.088	0.091	0.093	0.093	4.36
3) ethanol								0.000#	-1.00		
4) tertiary butyl alcohol	1.167	1.198	1.126	1.030	1.122		1.021	1.035	1.100	1.066	6.51
5) I pentafluorobenzene							-----ISTD-----				
6) chlorotrifluoroethene								0.000#	-1.00		
7) chlorodifluoromethane	0.380	0.409	0.398	0.320	0.368	0.471	0.340	0.364	0.381	0.376	12.19
8) dichlorodifluoromethane	0.543	0.544	0.445	0.431	0.423	0.501	0.438	0.458	0.473	0.466	10.50
9) chloromethane	0.767	0.755	0.623	0.602	0.592	0.792	0.593	0.724	0.639	0.676	12.13
10) vinyl chloride	0.694	0.711	0.573	0.552	0.546	0.623	0.547	0.597	0.605	0.605	10.86
11) bromomethane	0.430	0.447	0.335	0.318	0.293	0.469	0.199	0.363	0.357	0.357	25.37
----- Quadratic regression -----											
								Coefficient = 0.9993			
							Response Ratio = -0.00027 + 0.37469 *A + -0.04388 *A^2				
12) chloroethane	0.336	0.319	0.288	0.274	0.262	0.296	0.246	0.291	0.289	0.289	10.05
13) vinyl bromide								0.000#	-1.00		
14) trichlorofluoromethane	0.605	0.601	0.485	0.476	0.467	0.543	0.471	0.509	0.520	0.520	10.99
15) pentane	0.884	0.875	0.851	0.698	0.750		0.714	0.847	0.803	0.803	9.86
16) ethyl ether	0.239	0.249	0.223	0.203	0.211		0.206	0.220	0.222	0.222	7.66
17) Freon 123a								0.000#	-1.00		
18) acrolein	0.063	0.067	0.064	0.061		0.062		0.063	0.063	0.063	3.02
19) 1,1-dichloroethene	0.371	0.370	0.369	0.321	0.351	0.377	0.328	0.413	0.359	0.362	7.56
20) acetone	0.110		0.096	0.087	0.085		0.085	0.101	0.094	0.094	10.87
21) allyl chloride	0.244	0.234	0.259	0.230	0.252	0.215	0.236	0.242	0.239	0.239	5.67

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# Initial Calibration Summary

Page 2 of 6

Job Number: JB38711

Sample: VA7347-ICC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194762.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

22)	acetonitrile	0.040	0.033	0.030	0.032	0.031	0.033	0.033	11.13
23)	iodomethane	0.653	0.611	0.688	0.626	0.684	0.622	0.636	0.656
24)	iso-butyl alcohol	0.013	0.017	0.014	0.012	0.013	0.013	0.012	0.013
25)	carbon disulfide	1.369	1.397	1.445	1.282	1.391	1.281	1.293	1.437
26)	methylene chloride	0.556	0.721	0.490	0.422	0.448	0.416	0.507	0.508
		-----	Linear regression	-----	Coefficient =	0.9988			
			Response Ratio	=	0.02105 + 0.41554 *A				
27)	methyl acetate	0.261	0.294	0.260	0.243	0.259	0.335	0.250	0.247
28)	methyl tert butyl ether	1.136	1.115	1.126	1.036	1.082	1.157	1.057	1.000
29)	trans-1,2-dichloroethene	0.404	0.411	0.422	0.368	0.399	0.443	0.369	0.412
30)	di-isopropyl ether	1.682	1.732	1.710	1.473	1.681	1.833	1.527	1.576
31)	t-butyl formate	0.343	0.344	0.343	0.313	0.352	0.331	0.343	0.309
32)	3,3-dimethyl-1-butanol	0.037	0.042	0.040	0.038	0.040	0.041	0.035	0.039
33)	ethyl tert-butyl ether	1.436	1.473	1.464	1.276	1.452	1.477	1.358	1.139
34)	2-butanone	0.029	0.036	0.035	0.035	0.034	0.029	0.033	9.14
35)	1,1-dichloroethane	0.790	0.740	0.805	0.726	0.793	0.732	0.733	0.827
36)	chloroprene	0.575	0.586	0.609	0.512	0.596	0.613	0.555	0.559
37)	acrylonitrile	0.116	0.113	0.119	0.111	0.114	0.117	0.112	0.109
38)	vinyl acetate	0.051	0.057	0.050	0.058	0.057	0.049	0.054	7.62
39)	ethyl acetate	0.046	0.040	0.049	0.043	0.046	0.053	0.046	0.044
40)	ethyl acrylate	0.433	0.404	0.411	0.393	0.397	0.379	0.400	0.366
41)	2,2-dichloropropane	0.569	0.589	0.581	0.519	0.559	0.575	0.512	0.562
42)	cis-1,2-dichloroethene	0.444	0.433	0.449	0.415	0.446	0.432	0.417	0.435
43)	propionitrile	0.047	0.046	0.045	0.043	0.043	0.049	0.044	0.041
44)	bromochloromethane	0.190	0.175	0.194	0.182	0.194	0.181	0.186	0.184
45)	tetrahydrofuran	0.128	0.143	0.127	0.118	0.121	0.129	0.122	0.121
46)	chloroform	0.676	0.652	0.680	0.625	0.675	0.699	0.632	0.774
47)	dibromofluoromethane (s)	0.332	0.297	0.341	0.298	0.352	0.316	0.338	0.365
48)	1,2-dichloroethane-d4 (s)	0.340	0.303	0.349	0.304	0.349	0.351	0.338	0.396
49)	freon 113	0.248	0.271	0.264	0.223	0.256	0.261	0.237	0.246
50)	methacrylonitrile	0.251							6.20

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# Initial Calibration Summary

Page 3 of 6

Job Number: JB38711

Sample: VA7347-ICC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194762.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	0.219	0.213	0.207	0.197	0.203	0.210	0.202		0.200	0.206	3.49
51)	cyclohexane							0.571	0.590	0.604	0.544
								0.590	0.532	0.549	0.549
52)	1,1,1-trichloroethane							0.515	0.519	0.549	0.486
								0.536	0.499	0.498	0.441
53)	tert-amyl methyl ether							1.258	1.368	1.269	1.113
								1.258	1.487	1.178	1.154
54)	I 1,4-difluorobenzene								-----ISTD-----		
55)	Di-isobutylene									0.000#	-1.00
56)	epichlorohydrin							0.021	0.022	0.021	0.019
								0.021	0.028	0.021	0.021
57)	n-butyl alcohol							0.007	0.008	0.007	0.007
								0.007	0.007	0.007	0.007#
58)	carbon tetrachloride							0.275	0.284	0.291	0.264
								0.295	0.249	0.275	0.275
59)	1,1-dichloropropene							0.325	0.357	0.350	0.317
								0.347	0.317	0.325	0.351
60)	hexane							0.372	0.441	0.408	0.332
								0.376	0.512	0.346	0.377
61)	benzene							1.090	1.119	1.115	1.011
								1.093	1.134	1.000	1.275
62)	Iso-octane							1.061	1.222	1.250	1.033
								1.203	1.174	1.098	1.112
63)	heptane							0.223	0.272	0.248	0.207
								0.235	0.253	0.217	0.228
64)	tert amyl alcohol							0.010	0.011	0.009	0.009
								0.009	0.010	0.009	0.009
65)	isopropyl acetate							0.676	0.781	0.695	0.588
								0.652	0.802	0.617	0.638
66)	1,2-dichloroethane							0.283	0.262	0.285	0.271
								0.285	0.256	0.271	0.212
67)	trichloroethene							0.246	0.250	0.258	0.233
								0.252	0.228	0.235	0.274
68)	2-nitropropane							0.003	0.004	0.004	0.004
								0.004		0.003	0.004#
69)	tert-amyl ethyl ether							0.420	0.431	0.410	0.381
								0.418	0.409	0.404	0.380
70)	methylcyclohexane							0.453	0.525	0.513	0.421
								0.482	0.507	0.448	0.458
71)	2-chloroethyl vinyl ether							0.141	0.152	0.145	0.132
								0.145	0.159	0.134	0.132
72)	methyl methacrylate							0.147	0.136	0.140	0.139
								0.140	0.141	0.139	0.135
73)	1,2-dichloropropane							0.296	0.283	0.302	0.279
								0.299	0.283	0.277	0.309
74)	dibromomethane							0.141	0.129	0.138	0.130
								0.136	0.134	0.132	0.133
75)	bromodichloromethane							0.331	0.314	0.330	0.305
								0.328	0.316	0.313	0.321
76)	cis-1,3-dichloropropene							0.449	0.430	0.458	0.429
								0.456	0.435	0.427	0.484
77)	toluene-d8 (s)							0.931	0.891	0.964	0.819
								0.954	1.042	0.886	1.266
78)	4-methyl-2-pentanone							0.092	0.100	0.093	0.087
								0.087	0.090	0.088	0.086
79)	toluene							0.694	0.713	0.702	0.624
								0.693	0.725	0.635	0.849
80)	3-methyl-1-butanol							0.689	0.703	0.703	0.689

# Initial Calibration Summary

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Job Number: JB38711

Sample: VA7347-ICC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194762.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	0.011	0.013	0.012	0.011	0.011	0.012	0.011	0.012	7.74
81)	trans-1,3-dichloropropene								
	0.392	0.396	0.385	0.360	0.386	0.386	0.365	0.416	0.371
82)	ethyl methacrylate								
	0.301	0.320	0.303	0.290	0.299	0.315	0.297	0.289	0.302
83)	1,1,2-trichloroethane								
	0.188	0.178	0.178	0.170	0.179	0.178	0.173	0.150	0.172
84)	2-hexanone								
	0.089	0.091	0.086	0.083	0.083	0.095	0.084	0.077	0.086
85)	I chlorobenzene-d5						-----ISTD-----		
86)	tetrachloroethene								
	0.227	0.240	0.232	0.211	0.232	0.220	0.217	0.232	0.244
87)	1,3-dichloropropane								
	0.424	0.393	0.411	0.385	0.400	0.464	0.381	0.359	0.399
88)	butyl acetate								
	0.191	0.210	0.194	0.170	0.185		0.181	0.180	0.187
89)	dibromochloromethane								
	0.268	0.273	0.261	0.250	0.271	0.266	0.261	0.227	0.255
90)	1,2-dibromoethane								
	0.226	0.221	0.223	0.215	0.226	0.234	0.220	0.209	0.215
91)	n-butyl ether								
								0.000#	-1.00
92)	chlorobenzene								
	0.845	0.845	0.860	0.779	0.846	0.851	0.791	0.986	0.840
93)	1,1,1,2-tetrachloroethane								
	0.293	0.283	0.287	0.270	0.290	0.281	0.278	0.275	0.285
94)	ethylbenzene								
	1.449	1.455	1.454	1.314	1.423	1.436	1.310	1.879	1.467
95)	m,p-xylene								
	0.568	0.573	0.564	0.513	0.548	0.585	0.508	0.816	0.570
	-----	Linear regression	-----		Coefficient =	0.9987			
					Response Ratio =	0.02216 + 0.51248 *A			
96)	o-xylene								
	0.563	0.579	0.573	0.521	0.562	0.584	0.527	0.716	0.571
97)	styrene								
	0.976	0.968	0.968	0.897	0.968	0.969	0.912	1.101	0.953
98)	bromoform								
	0.178	0.183	0.173	0.167	0.177	0.169	0.181	0.160	0.173
99)	I 1,4-dichlorobenzene-d						-----ISTD-----		
100)	isopropylbenzene								
	2.663	2.709	2.688	2.429	2.658	2.692	2.429	2.943	2.701
101)	cyclohexanone								
	0.060	0.052	0.037	0.053		0.040		0.053	0.049
	-----	Quadratic regression	-----					Coefficient =	0.9984
								Response Ratio =	0.01447 + 0.04568 *A + -0.00009 *A^2
102)	4-bromofluorobenzene (s)								
	0.786	0.847	0.766	0.661	0.774		0.734	0.724	0.756
103)	bromobenzene								
	0.710	0.704	0.676	0.622	0.677	0.684	0.629	0.813	0.666
104)	1,1,2,2-tetrachloroethane								
	0.661	0.727	0.612	0.586	0.601	0.633	0.582	0.583	0.574
105)	trans-1,4-dichloro-2-butene								
	0.171	0.182	0.177	0.166	0.173	0.171	0.170	0.169	0.172
106)	1,2,3-trichloropropane								
	0.150	0.163	0.135	0.128	0.131	0.148	0.128	0.119	0.138
107)	n-propylbenzene								

6.9.1  
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**Initial Calibration Summary**

Job Number: JB38711

Sample: VA7347-ICC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194762.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

108)	2-chlorotoluene	3.248 3.384 3.289 2.941 3.193 3.396 2.883 4.189 3.315 3.315	3.315	11.29
		0.683 0.696 0.662 0.606 0.657 0.691 0.608 0.773 0.657 0.670	0.670	7.52
109)	4-chlorotoluene	2.108 2.164 2.010 1.837 1.991 2.322 1.865 2.773 2.013 2.120	2.120	13.49
110)	p-ethyltoluene	2.854 2.895 2.668 2.388 2.587 2.694 2.405	2.597	2.636 6.99
111)	1,3,5-trimethylbenzene	2.263 2.340 2.298 2.059 2.250 2.300 2.100	2.294	2.238 4.56
112)	tert-butylbenzene	1.926 2.006 1.947 1.757 1.921 1.924 1.797	1.929	1.901 4.31
113)	pentachloroethane	0.415 0.412 0.412 0.383 0.411 0.427 0.393	0.394	0.406 3.54
114)	1,2,4-trimethylbenzene	2.413 2.508 2.374 2.137 2.339 2.522 2.186	2.342	2.353 5.83
115)	sec-butylbenzene	3.008 3.119 3.119 2.800 3.013 3.058 2.773	3.075	2.995 4.53
116)	1,3-dichlorobenzene	1.405 1.467 1.325 1.223 1.325 1.415 1.239	1.328	1.341 6.34
117)	p-isopropyltoluene	2.550 2.644 2.528 2.290 2.475 2.622 2.282	2.561	2.494 5.56
118)	1,2,3-trimethylbenzene		0.000#	-1.00
119)	1,4-dichlorobenzene	1.431 1.506 1.334 1.247 1.333 1.508 1.253	1.326	1.367 7.55
120)	p-diethylbenzene	1.736 1.751 1.590 1.425 1.517 1.721 1.422	1.559	1.590 8.44
121)	1,2-dichlorobenzene	1.352 1.441 1.262 1.193 1.237 1.430 1.150	1.253	1.290 8.31
122)	n-butylbenzene	1.437 1.536 1.482 1.332 1.416 1.490 1.303	1.469	1.433 5.60
123)	1,2,4,5-tetramethylbenzene	2.730 2.774 2.550 2.316 2.173 2.732 1.968	2.476	2.465 11.87
124)	1,2-dibromo-3-chloropropane	0.142 0.105 0.097 0.077 0.069	0.102	0.099 25.87
		----- Linear regression ----- Coefficient = 0.9921		
		Response Ratio = 0.01472 + 0.06691 *A		
125)	1,3,5-trichlorobenzene	1.144 1.258 1.103 1.017 0.898 1.245	1.113	1.111 11.32
126)	1,2,4-trichlorobenzene	0.954 1.026 0.961 0.886 0.662 1.129 0.572	0.942	0.892 20.78
		----- Quadratic regression ----- Coefficient = 0.9955		
		Response Ratio = 0.03076 + 0.81845 *A + -0.06444 *A^2		
127)	hexachlorobutadiene	0.537 0.598 0.573 0.512 0.433 0.599	0.562	0.545 10.71
128)	naphthalene	1.857 2.103 1.819 1.691 1.121 2.106	1.707	1.772 18.78
		----- Quadratic regression ----- Coefficient = 0.9983		
		Response Ratio = -0.03184 + 2.22069 *A + -0.53960 *A^2		
129)	1,2,3-trichlorobenzene	0.870 0.961 0.843 0.755 0.461 0.993	0.801	0.812 21.67
		----- Quadratic regression ----- Coefficient = 0.9983		
		Response Ratio = -0.01378 + 1.03306 *A + -0.28162 *A^2		
130)	hexachloroethane	0.402 0.378 0.424 0.394 0.428 0.390 0.397	0.397	0.401 4.18
131)	Ethylenimine			

# Initial Calibration Summary

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Job Number: JB38711  
Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VA7347-ICC7347  
Lab FileID: A194762.D

132) Bis(chloromethyl)ether	0.000#	-1.00
133) 2-methylnaphthalene	0.000#	-1.00
	0.000#	-1.00

(#) = Out of Range   ### Number of calibration levels exceeded format   ###

MA7347.M

Sat May 18 09:34:57 2013 MSA

6.9.1  
6

**Initial Calibration Verification**

Job Number: JB38711

Sample: VA7347-ICV7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194768.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Data File : C:\HPCHEM\1\DATA\A194768.D Vial: 100  
 Acq On : 17 May 2013 6:12 pm Operator: Oksanat  
 Sample : icv7347-50 Inst : MSA  
 Misc : MS48368,VA7347,5,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Fri May 17 17:59:16 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	96	0.00	7.57
2 M	1,4-dioxane	0.093	0.090	3.2	94	0.00	11.63
3 M	ethanol			-----NA-----			
4 M	tertiary butyl alcohol	1.100	1.046	4.9	98	0.00	7.69
5 I	pentafluorobenzene	1.000	1.000	0.0	99	0.00	9.90
6	chlorotrifluoroethene			-----NA-----			
7 M	chlorodifluoromethane	0.381	0.381	0.0	119	0.00	3.97
8 M	dichlorodifluoromethane	0.473	0.321	32.1#	74	0.00	3.94
9 M	chloromethane	0.676	0.591	12.6	98	0.00	4.30
10 M	vinyl chloride	0.605	0.507	16.2	91	0.00	4.56
11 M	bromomethane	50.000	48.417	True	Calc.	% Drift	
12 M	chloroethane	0.289	0.282	5.2	102	0.00	5.44
13	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	0.520	0.429	17.5	90	0.00	5.92
15 m	pentane	0.803	0.723	10.0	103	0.00	5.98
16 M	ethyl ether	0.222	0.213	4.1	104	0.00	6.34
17	Freon 123a			-----NA-----			
18 M	acrolein	0.063	0.066	-4.8	107	0.00	6.65
19 M	1,1-dichloroethene	0.362	0.341	5.8	106	0.00	6.80
20 M	acetone	0.094	0.087	7.4	99	0.00	6.89
21 M	allyl chloride	0.239	0.248	-3.8	107	0.00	7.38
22 M	acetonitrile	0.033	0.030	9.1	99	0.00	7.38
23 M	iodomethane	0.650	0.654	-0.6	104	0.00	7.11
24 M	iso-butyl alcohol	0.013	0.012	7.7	96	0.00	10.23
25 M	carbon disulfide	1.370	1.351	1.4	105	0.00	7.22
26 M	methylene chloride	50.000	49.686	True	Calc.	% Drift	
27 M	methyl acetate	0.269	0.224	16.7	92	0.00	7.37
28 M	methyl tert butyl ether	1.084	1.030	5.0	99	0.00	7.91
29 M	trans-1,2-dichloroethene	0.404	0.377	6.7	102	0.00	7.97
30 M	di-isopropyl ether	1.640	1.552	5.4	105	0.00	8.54
31 m	t-butyl formate	0.335	0.335	0.0	106	0.00	9.78
32 m	3,3-dimethyl-1-butanol	0.039	0.036	7.7	93	0.00	13.55
33 M	ethyl tert-butyl ether	1.379	1.333	3.3	104	0.00	9.03

**Initial Calibration Verification**

Job Number: JB38711

Sample: VA7347-ICV7347

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: A194768.D

34 M	2-butanone	0.033	0.032	3.0	92	0.00	9.34
35 M	1,1-dichloroethane	0.772	0.770	0.3	105	0.00	8.59
36 M	chloroprene	0.576	0.511	11.3	99	0.00	8.69
37 M	acrylonitrile	0.114	0.109	4.4	97	0.00	7.97
38 M	vinyl acetate	0.054	0.046	14.8	92	0.00	8.57
39 M	ethyl acetate	0.046	0.042	8.7	96	0.00	9.34
40	ethyl acrylate	0.398	0.376	5.5	95	0.00	11.23
41 M	2,2-dichloropropane	0.558	0.518	7.2	99	0.00	9.36
42 M	cis-1,2-dichloroethene	0.434	0.424	2.3	101	0.00	9.37
43 M	propionitrile	0.045	0.041	8.9	96	0.00	9.47
44 M	bromochloromethane	0.186	0.181	2.7	99	0.00	9.70
45 M	tetrahydrofuran	0.126	0.116	7.9	98	0.00	9.73
46 M	chloroform	0.676	0.631	6.7	100	0.00	9.76
47 S	dibromofluoromethane (s)	0.328	0.323	1.5	108	0.00	9.98
48 S	1,2-dichloroethane-d4 (s)	0.339	0.325	4.1	106	0.00	10.41
49 M	freon 113	0.251	0.208	17.1	93	0.00	6.76
50 M	methacrylonitrile	0.206	0.193	6.3	97	0.00	9.65
51	cyclohexane	0.574	0.555	3.3	101	0.00	10.06
52 M	1,1,1-trichloroethane	0.508	0.498	2.0	102	0.00	10.00
53 M	tert-amyl methyl ether	1.261	1.168	7.4	104	0.00	10.49
54 I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	10.86
55 M	Di-isobutylene			-----NA-----			
56 M	epichlorohydrin	0.021	0.019	9.5	96	0.00	12.22
57 M	n-butyl alcohol	0.007	0.006#	14.3	94	0.00	11.02
58 M	carbon tetrachloride	0.278	0.273	1.8	103	0.00	10.21
59 M	1,1-dichloropropene	0.336	0.306	8.9	96	0.00	10.19
60 M	hexane	0.395	0.301	23.8#	91	0.00	8.26
61 M	benzene	1.106	1.039	6.1	103	0.00	10.47
62 M	Iso-octane	1.144	0.984	14.0	95	0.00	10.44
63 M	heptane	0.235	0.174	26.0#	84	0.00	10.61
64 m	tert amyl alcohol	0.009	0.009	5.6	95	0.00	10.36
65 M	isopropyl acetate	0.681	0.592	13.1	101	0.00	10.39
66 M	1,2-dichloroethane	0.267	0.267	0.0	98	0.00	10.51
67 M	trichloroethene	0.248	0.237	4.4	102	0.00	11.21
68 M	2-nitropropane	0.004	0.004#	0.0	96	0.00	12.07
69 m	tert-amyl ethyl ether	0.407	0.390	4.3	102	0.00	11.37
70 m	methylcyclohexane	0.476	0.409	14.1	97	0.00	11.42
71 M	2-chloroethyl vinyl ether	0.143	0.131	8.4	99	0.00	12.08
72 M	methyl methacrylate	0.140	0.133	5.0	95	0.00	11.50
73 M	1,2-dichloropropene	0.292	0.288	1.4	103	0.00	11.51
74 M	dibromomethane	0.134	0.127	5.2	98	0.00	11.69
75 M	bromodichloromethane	0.320	0.306	4.4	100	0.00	11.83
76 M	cis-1,3-dichloropropene	0.446	0.391	12.3	91	0.00	12.31
77 S	toluene-d8 (s)	0.960	0.873	9.1	106	0.00	12.62
78 M	4-methyl-2-pentanone	0.090	0.084	6.7	96	0.00	12.42
79 M	toluene	0.703	0.632	10.1	101	0.00	12.69
80 M	3-methyl-1-butanol	0.012	0.011	8.3	97	0.00	12.44
81 M	trans-1,3-dichloropropene	0.384	0.352	8.3	97	0.00	12.94
82 M	ethyl methacrylate	0.302	0.268	11.3	92	0.00	12.90
83 M	1,1,2-trichloroethane	0.174	0.169	2.9	100	0.00	13.18
84 M	2-hexanone	0.086	0.080	7.0	96	0.00	13.35
85 I	chlorobenzene-d5	1.000	1.000	0.0	101	0.00	14.31
86 M	tetrachloroethene	0.228	0.210	7.9	100	0.00	13.33
87 M	1,3-dichloropropane	0.402	0.372	7.5	97	0.00	13.37
88 M	butyl acetate	0.187	0.162	13.4	96	0.00	13.42
89 M	dibromochloromethane	0.259	0.245	5.4	99	0.00	13.67
90 M	1,2-dibromoethane	0.221	0.207	6.3	97	0.00	13.84
91 M	n-butyl ether			-----NA-----			

**Initial Calibration Verification**

Job Number: JB38711

Sample: VA7347-ICV7347

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: A194768.D

92 M	chlorobenzene	0.849	0.783	7.8	101	0.00	14.34
93 M	1,1,1,2-tetrachloroethane	0.282	0.268	5.0	100	0.00	14.42
94 M	ethylbenzene	1.465	1.332	9.1	102	0.00	14.39
		-----	True	Calc.	% Drift	-----	
95 M	m,p-xylene	100.000	98.111	1.9	101	0.00	14.51
		-----	AvgRF	CCRF	% Dev	-----	
96 M	o-xylene	0.577	0.522	9.5	101	0.00	14.99
97 M	styrene	0.968	0.902	6.8	101	0.00	15.01
98 M	bromoform	0.173	0.161	6.9	97	0.00	15.33
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	16.94
100 M	isopropylbenzene	2.657	2.438	8.2	101	0.00	15.37
		-----	True	Calc.	% Drift	-----	
101 m	cyclohexanone	500.000	345.147	31.0#	88	0.00	15.60
		-----	AvgRF	CCRF	% Dev	-----	
102 S	4-bromofluorobenzene (s)	0.756	0.694	8.2	106	0.00	15.62
103 M	bromobenzene	0.687	0.627	8.7	102	0.00	15.84
104 M	1,1,2,2-tetrachloroethane	0.617	0.551	10.7	95	0.00	15.75
105 M	trans-1,4-dichloro-2-bute	0.172	0.160	7.0	98	0.00	15.79
106 M	1,2,3-trichloropropane	0.138	0.121	12.3	96	0.00	15.83
107 M	n-propylbenzene	3.315	3.038	8.4	104	0.00	15.83
108 M	2-chlorotoluene	0.670	0.607	9.4	101	0.00	16.01
109 M	4-chlorotoluene	2.120	1.826	13.9	100	0.00	16.13
110 m	p-ethyltoluene	2.636	2.435	7.6	103	0.00	15.95
111 M	1,3,5-trimethylbenzene	2.238	2.090	6.6	103	0.00	16.00
112 M	tert-butylbenzene	1.901	1.764	7.2	101	0.00	16.40
113 M	pentachloroethane	0.406	0.379	6.7	100	0.00	16.51
114 M	1,2,4-trimethylbenzene	2.353	2.204	6.3	104	0.00	16.45
115 M	sec-butylbenzene	2.995	2.802	6.4	101	0.00	16.64
116 M	1,3-dichlorobenzene	1.341	1.252	6.6	103	0.00	16.87
117 M	p-isopropyltoluene	2.494	2.407	3.5	106	0.00	16.77
118 M	1,2,3-trimethylbenzene		-----NA-----				
119 M	1,4-dichlorobenzene	1.367	1.237	9.5	100	0.00	16.97
120 m	p-diethylbenzene	1.590	1.458	8.3	103	0.00	17.20
121 M	1,2-dichlorobenzene	1.290	1.184	8.2	100	0.00	17.41
122 M	n-butylbenzene	1.433	1.353	5.6	103	0.00	17.24
123 m	1,2,4,5-tetramethylbenzen	2.465	2.361	4.2	103	0.00	18.08
		-----	True	Calc.	% Drift	-----	
124 M	1,2-dibromo-3-chloropropa	50.000	56.421	-12.8	94	0.00	18.29
		-----	AvgRF	CCRF	% Dev	-----	
125 M	1,3,5-trichlorobenzene	1.111	1.032	7.1	103	0.00	18.46
		-----	True	Calc.	% Drift	-----	
126 M	1,2,4-trichlorobenzene	50.000	54.759	-9.5	97	0.00	19.20
		-----	AvgRF	CCRF	% Dev	-----	
127 M	hexachlorobutadiene	0.545	0.506	7.2	100	0.00	19.31
		-----	True	Calc.	% Drift	-----	
128 M	naphthalene	50.000	47.184	5.6	95	0.00	19.53
129 M	1,2,3-trichlorobenzene	50.000	48.183	3.6	96	0.00	19.81
		-----	AvgRF	CCRF	% Dev	-----	
130 M	hexachloroethane	0.401	0.396	1.2	101	0.00	17.69

**Initial Calibration Verification**

Job Number: JB38711

Sample: VA7347-ICV7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A194768.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

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131	Ethylenimine	-----NA-----
132	Bis(chloromethyl)ether	-----NA-----
133	2-methylnaphthalene	-----NA-----

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( # ) = Out of Range  
A194762.D MA7347.MSPCC's out = 0 CCC's out = 0  
Sat May 18 09:34:24 2013 MSA

**Initial Calibration Verification**

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VA7347-ICV7347

Lab FileID: A194768A.D

**Evaluate Continuing Calibration Report**

Data File : C:\HPCHEM\1\DATA\A194768A.D Vial: 100  
 Acq On : 17 May 2013 7:04 pm Operator: Oksanat  
 Sample : icv7347-50 Inst : MSA  
 Misc : MS48368,VA7347,5,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Fri May 17 17:59:16 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	109	0.00	7.56
5 I	pentafluorobenzene	1.000	1.000	0.0	100	0.00	9.90
8 M	dichlorodifluoromethane	0.473	0.477	-0.8	110	0.00	3.94
9 M	chloromethane	0.676	0.646	4.4	107	0.00	4.29
10 M	vinyl chloride	0.605	0.606	-0.2	110	0.00	4.56
-----		True	Calc.	% Drift	-----	-----	-----
11 M	bromomethane	50.000	52.824	-5.6	109	0.00	5.25
-----		AvgRF	CCRF	% Dev	-----	-----	-----
12 M	chloroethane	0.289	0.297	-2.8	108	0.00	5.44
14 M	trichlorofluoromethane	0.520	0.514	1.2	108	-0.02	5.90
47 S	dibromofluoromethane (s)	0.328	0.285	13.1	95	0.00	9.97
48 S	1,2-dichloroethane-d4 (s)	0.339	0.285	15.9	94	0.00	10.41
-----		-----	-----	-----	-----	-----	-----
54 I	1,4-difluorobenzene	1.000	1.000	0.0	101	0.00	10.86
77 S	toluene-d8 (s)	0.960	0.815	15.1	100	0.00	12.61
85 I	chlorobenzene-d5	1.000	1.000	0.0	103	0.00	14.30
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	103	0.00	16.94
102 S	4-bromofluorobenzene (s)	0.756	0.642	15.1	100	0.00	15.62
-----		-----	-----	-----	-----	-----	-----
-----		-----	-----	-----	-----	-----	-----

(#) = Out of Range  
 A194762.D MA7347.M

SPCC's out = 0 CCC's out = 0  
 Sat May 18 09:33:51 2013 MSA

# Continuing Calibration Summary

Page 1 of 4

Job Number: JB38711

Sample: VA7375-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195480.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\A195480.D Vial: 100  
 Acq On : 8 Jun 2013 9:32 pm Operator: Oksanat  
 Sample : cc7347-50 Inst : MSA  
 Misc : MS49559,VA7375,5,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	98	0.00	7.56
2 M	1,4-dioxane	0.093	0.089	4.3	95	0.00	11.63
3 M	ethanol			-----NA-----			
4 M	tertiary butyl alcohol	1.100	1.077	2.1	102	0.00	7.68
5 I	pentafluorobenzene	1.000	1.000	0.0	97	0.00	9.90
6	chlorotrifluoroethene			-----NA-----			
7 M	chlorodifluoromethane	0.381	0.403	-5.8	122	0.00	3.98
8 M	dichlorodifluoromethane	0.473	0.417	11.8	94	0.00	3.94
9 M	chloromethane	0.676	0.771	-14.1	124	0.01	4.31
10 M	vinyl chloride	0.605	0.709	-17.2	124	0.01	4.57
		-----True-----	Calc.	% Drift			
11 M	bromomethane	50.000	56.132	-12.3	111	0.01	5.26
		AvgRF	CCRF	% Dev			
12 M	chloroethane	0.289	0.318	-10.0	113	0.01	5.45
13	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	0.520	0.535	-2.9	109	-0.02	5.90
15 m	pentane			-----NA-----			
16 M	ethyl ether	0.222	0.225	-1.4	107	0.00	6.35
17	Freon 123a			-----NA-----			
18 M	acrolein	0.063	0.073	-15.9	115	0.00	6.65
19 M	1,1-dichloroethene	0.362	0.371	-2.5	112	0.00	6.80
20 M	acetone	0.094	0.096	-2.1	107	0.00	6.89
21 M	allyl chloride	0.239	0.270	-13.0	114	0.00	7.38
22 M	acetonitrile	0.033	0.033	0.0	106	0.00	7.38
23 M	iodomethane	0.650	0.711	-9.4	110	0.00	7.11
24 M	iso-butyl alcohol	0.013	0.013	0.0	103	0.00	10.23
25 M	carbon disulfide	1.370	1.525	-11.3	115	0.00	7.22
		-----True-----	Calc.	% Drift			
26 M	methylene chloride	50.000	56.068	-12.1	112	0.00	7.60
		AvgRF	CCRF	% Dev			
27 M	methyl acetate	0.269	0.270	-0.4	108	0.00	7.37
28 M	methyl tert butyl ether	1.084	1.154	-6.5	108	0.00	7.91
29 M	trans-1,2-dichloroethene	0.404	0.416	-3.0	109	0.00	7.97
30 M	di-isopropyl ether	1.640	1.708	-4.1	112	0.00	8.54
31 m	t-butyl formate	0.335	0.350	-4.5	108	0.00	9.78
32 m	3,3-dimethyl-1-butanol	0.039	0.039	0.0	100	0.00	13.55
33 M	ethyl tert-butyl ether	1.379	1.490	-8.0	113	0.00	9.03

6.9.4  
6

## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7375-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: A195480.D

34 M	2-butanone	0.033	0.037	-12.1	104	0.00	9.34
35 M	1,1-dichloroethane	0.772	0.847	-9.7	113	0.00	8.59
36 M	chloroprene	0.576	0.599	-4.0	113	0.00	8.68
37 M	acrylonitrile	0.114	0.121	-6.1	105	0.00	7.97
38 M	vinyl acetate	0.054	0.056	-3.7	110	0.00	8.57
39 M	ethyl acetate	0.046	0.051	-10.9	115	0.00	9.35
40	ethyl acrylate	0.398	0.628	-57.8#	155	0.20	11.42
41 M	2,2-dichloropropane	0.558	0.588	-5.4	110	0.00	9.36
42 M	cis-1,2-dichloroethene	0.434	0.459	-5.8	107	0.00	9.37
43 M	propionitrile	0.045	0.046	-2.2	104	0.00	9.47
44 M	bromochloromethane	0.186	0.194	-4.3	103	0.00	9.70
45 M	tetrahydrofuran	0.126	0.131	-4.0	108	0.00	9.72
46 M	chloroform	0.676	0.704	-4.1	109	0.00	9.76
47 S	dibromofluoromethane (s)	0.328	0.347	-5.8	113	0.00	9.97
48 S	1,2-dichloroethane-d4 (s)	0.339	0.337	0.6	108	0.00	10.41
49 M	freon 113	0.251	0.249	0.8	108	0.00	6.77
50 M	methacrylonitrile	0.206	0.216	-4.9	106	0.00	9.65
51	cyclohexane	0.574	0.637	-11.0	113	0.00	10.06
52 M	1,1,1-trichloroethane	0.508	0.554	-9.1	110	0.00	10.01
53 M	tert-amyl methyl ether	1.261	1.262	-0.1	110	0.00	10.49
54 I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	10.86
55 M	Di-isobutylene			-----NA-----			
56 M	epichlorohydrin	0.021	0.020	4.8	103	0.00	12.22
57 M	n-butyl alcohol	0.007	0.007#	0.0	102	0.00	11.02
58 M	carbon tetrachloride	0.278	0.297	-6.8	112	0.00	10.20
59 M	1,1-dichloropropene	0.336	0.352	-4.8	111	0.00	10.18
60 M	hexane	0.395	0.357	9.6	107	0.00	8.26
61 M	benzene	1.106	1.120	-1.3	110	0.00	10.47
62 M	Iso-octane	1.144	1.178	-3.0	114	0.00	10.43
63 M	heptane	0.235	0.225	4.3	108	0.00	10.61
64 m	tert amyl alcohol			-----NA-----			
65 M	isopropyl acetate	0.681	0.616	9.5	105	0.00	10.39
66 M	1,2-dichloroethane	0.267	0.297	-11.2	109	0.00	10.50
67 M	trichloroethene	0.248	0.251	-1.2	108	0.00	11.21
68 M	2-nitropropane	0.004	0.004#	0.0	109	0.00	12.07
69 m	tert-amyl ethyl ether			-----NA-----			
70 m	methylcyclohexane	0.476	0.456	4.2	108	0.00	11.42
71 M	2-chloroethyl vinyl ether	0.143	0.138	3.5	104	0.00	12.07
72 M	methyl methacrylate	0.140	0.149	-6.4	106	0.00	11.50
73 M	1,2-dichloropropene	0.292	0.313	-7.2	112	0.00	11.51
74 M	dibromomethane	0.134	0.139	-3.7	107	0.00	11.69
75 M	bromodichloromethane	0.320	0.343	-7.2	112	0.00	11.82
76 M	cis-1,3-dichloropropene	0.446	0.472	-5.8	110	0.00	12.31
77 S	toluene-d8 (s)	0.960	1.017	-5.9	124	0.00	12.61
78 M	4-methyl-2-pentanone	0.090	0.091	-1.1	104	0.00	12.41
79 M	toluene	0.703	0.702	0.1	112	0.00	12.69
80 M	3-methyl-1-butanol	0.012	0.011	8.3	103	0.00	12.44
81 M	trans-1,3-dichloropropene	0.384	0.392	-2.1	109	0.00	12.93
82 M	ethyl methacrylate	0.302	0.315	-4.3	108	0.00	12.90
83 M	1,1,2-trichloroethane	0.174	0.187	-7.5	110	0.00	13.17
84 M	2-hexanone	0.086	0.088	-2.3	106	0.00	13.35
85 I	chlorobenzene-d5	1.000	1.000	0.0	104	0.00	14.31
86 M	tetrachloroethene	0.228	0.224	1.8	110	0.00	13.33
87 M	1,3-dichloropropane	0.402	0.400	0.5	108	0.00	13.37
88 M	butyl acetate	0.187	0.182	2.7	111	0.00	13.42
89 M	dibromochloromethane	0.259	0.260	-0.4	108	0.00	13.67
90 M	1,2-dibromoethane	0.221	0.224	-1.4	108	0.00	13.83
91 M	n-butyl ether			-----NA-----			

## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7375-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195480.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

92 M	chlorobenzene	0.849	0.831	2.1	111	0.00	14.34
93 M	1,1,1,2-tetrachloroethane	0.282	0.282	0.0	108	0.00	14.41
94 M	ethylbenzene	1.465	1.387	5.3	109	0.00	14.39
		-----	True	Calc.	% Drift	-----	
95 M	m,p-xylene	100.000	104.335	-4.3	110	0.00	14.51
		-----	AvgRF	CCRF	% Dev	-----	
96 M	o-xylene	0.577	0.553	4.2	110	0.00	14.99
97 M	styrene	0.968	0.927	4.2	107	0.00	15.00
98 M	bromoform	0.173	0.170	1.7	105	0.00	15.32
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	16.93
100 M	isopropylbenzene	2.657	2.637	0.8	109	0.00	15.37
		-----	True	Calc.	% Drift	-----	
101 m	cyclohexanone	500.000	433.118	13.4	109	0.00	15.59
		-----	AvgRF	CCRF	% Dev	-----	
102 S	4-bromofluorobenzene (s)	0.756	0.755	0.1	115	0.00	15.61
103 M	bromobenzene	0.687	0.663	3.5	107	0.00	15.84
104 M	1,1,2,2-tetrachloroethane	0.617	0.614	0.5	105	0.00	15.74
105 M	trans-1,4-dichloro-2-bute	0.172	0.168	2.3	102	0.00	15.79
106 M	1,2,3-trichloropropane	0.138	0.133	3.6	104	0.00	15.83
107 M	n-propylbenzene	3.315	3.170	4.4	109	0.00	15.83
108 M	2-chlorotoluene	0.670	0.656	2.1	109	0.00	16.01
109 M	4-chlorotoluene	2.120	1.970	7.1	108	0.00	16.12
110 m	p-ethyltoluene			-----NA-----			
111 M	1,3,5-trimethylbenzene	2.238	2.234	0.2	109	0.00	16.00
112 M	tert-butylbenzene	1.901	1.885	0.8	108	0.00	16.39
113 M	pentachloroethane	0.406	0.400	1.5	105	0.00	16.51
114 M	1,2,4-trimethylbenzene	2.353	2.309	1.9	109	0.00	16.45
115 M	sec-butylbenzene	2.995	2.997	-0.1	108	0.00	16.64
116 M	1,3-dichlorobenzene	1.341	1.290	3.8	106	0.00	16.87
117 M	p-isopropyltoluene	2.494	2.430	2.6	107	0.00	16.77
118 M	1,2,3-trimethylbenzene			-----NA-----			
119 M	1,4-dichlorobenzene	1.367	1.296	5.2	105	0.00	16.96
120 m	p-diethylbenzene			-----NA-----			
121 M	1,2-dichlorobenzene	1.290	1.229	4.7	104	0.00	17.41
122 M	n-butylbenzene	1.433	1.355	5.4	102	0.00	17.24
123 m	1,2,4,5-tetramethylbenzen			-----NA-----			
		-----	True	Calc.	% Drift	-----	
124 M	1,2-dibromo-3-chloropropa	50.000	62.248	-24.5#	102	0.00	18.28
		-----	AvgRF	CCRF	% Dev	-----	
125 M	1,3,5-trichlorobenzene	1.111	1.013	8.8	100	0.00	18.46
		-----	True	Calc.	% Drift	-----	
126 M	1,2,4-trichlorobenzene	50.000	56.249	-12.5	99	0.00	19.19
		-----	AvgRF	CCRF	% Dev	-----	
127 M	hexachlorobutadiene	0.545	0.508	6.8	100	0.00	19.30
		-----	True	Calc.	% Drift	-----	
128 M	naphthalene	50.000	52.191	-4.4	101	0.00	19.53
129 M	1,2,3-trichlorobenzene	50.000	52.059	-4.1	101	0.00	19.80
		-----	AvgRF	CCRF	% Dev	-----	
130 M	hexachloroethane	0.401	0.414	-3.2	106	0.00	17.69

6.9.4  
6

**Continuing Calibration Summary**

Job Number: JB38711

Sample: VA7375-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195480.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

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131	Ethylenimine	-----NA-----
132	Bis(chloromethyl)ether	-----NA-----
133	2-methylnaphthalene	-----NA-----

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( # ) = Out of Range  
A194762.D MA7347.MSPCC's out = 0 CCC's out = 0  
Mon Jun 10 10:39:27 2013 MSA

# Continuing Calibration Summary

Page 1 of 4

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195513.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\A195513.D Vial: 100  
 Acq On : 10 Jun 2013 12:13 pm Operator: Oksanat  
 Sample : cc7347-20 Inst : MSA  
 Misc : MS49475,VA7376,5,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	95	0.00	7.56
2 M	1,4-dioxane	0.093	0.096	-3.2	93	0.00	11.63
3 M	ethanol			-----NA-----			
4 M	tertiary butyl alcohol	1.100	1.233	-12.1	104	0.00	7.69
5 I	pentafluorobenzene	1.000	1.000	0.0	82	0.00	9.89
6	chlorotrifluoroethene			-----NA-----			
7 M	chlorodifluoromethane	0.381	0.394	-3.4	81	0.00	3.98
8 M	dichlorodifluoromethane	0.473	0.475	-0.4	87	0.00	3.94
9 M	chloromethane	0.676	0.767	-13.5	101	0.00	4.29
10 M	vinyl chloride	0.605	0.692	-14.4	99	0.00	4.56
11 M	bromomethane	20.000	22.090	True Calc. -10.4	96	0.00	5.24
12 M	chloroethane	0.289	0.313	AvgRF % Dev	89	0.00	5.44
13	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	0.520	0.549	-5.6	93	-0.01	5.90
15 m	pentane	0.803	0.640	20.3#	62	0.00	5.98
16 M	ethyl ether	0.222	0.236	-6.3	86	0.00	6.34
17	Freon 123a			-----NA-----			
18 M	acrolein	0.063	0.079	-25.4#	102	0.00	6.65
19 M	1,1-dichloroethene	0.362	0.366	-1.1	81	0.00	6.79
20 M	acetone	0.094	0.116	-23.4#	99	-0.02	6.88
21 M	allyl chloride	0.239	0.265	-10.9	84	0.00	7.37
22 M	acetonitrile	0.033	0.036	-9.1	89	-0.01	7.37
23 M	iodomethane	0.650	0.720	-10.8	86	-0.01	7.10
24 M	iso-butyl alcohol	0.013	0.016	-23.1#	96	0.00	10.22
25 M	carbon disulfide	1.370	1.450	-5.8	82	0.00	7.22
26 M	methylene chloride	20.000	22.377	True Calc. -11.9	87	0.00	7.59
27 M	methyl acetate	0.269	0.307	AvgRF % Dev	97	0.00	7.36
28 M	methyl tert butyl ether	1.084	1.244	-14.8	90	-0.01	7.91
29 M	trans-1,2-dichloroethene	0.404	0.419	-3.7	81	0.00	7.97
30 M	di-isopropyl ether	1.640	1.665	-1.5	80	0.00	8.53
31 m	t-butyl formate	0.335	0.376	-12.2	90	0.00	9.77
32 m	3,3-dimethyl-1-butanol	0.039	0.047	-20.5#	97	0.00	13.54
33 M	ethyl tert-butyl ether	1.379	1.538	-11.5	86	0.00	9.03

6.9.5  
6

## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: A195513.D

34 M	2-butanone	0.033	0.041	-24.2#	95	0.00	9.33
35 M	1,1-dichloroethane	0.772	0.817	-5.8	83	0.00	8.58
36 M	chloroprene	0.576	0.568	1.4	76	0.00	8.68
37 M	acrylonitrile	0.114	0.134	-17.5	92	0.00	7.96
38 M	vinyl acetate	0.054	0.063	-16.7	90	0.00	8.56
39 M	ethyl acetate	0.046	0.057	-23.9#	96	0.00	9.34
40	ethyl acrylate	0.398	0.426	-7.0	85	0.00	11.22
41 M	2,2-dichloropropane	0.558	0.585	-4.8	82	0.00	9.35
42 M	cis-1,2-dichloroethene	0.434	0.468	-7.8	85	0.00	9.36
43 M	propionitrile	0.045	0.052	-15.6	94	0.00	9.46
44 M	bromochloromethane	0.186	0.206	-10.8	87	0.00	9.69
45 M	tetrahydrofuran	0.126	0.144	-14.3	93	0.00	9.72
46 M	chloroform	0.676	0.713	-5.5	86	0.00	9.75
47 S	dibromofluoromethane (s)	0.328	0.341	-4.0	82	0.00	9.96
48 S	1,2-dichloroethane-d4 (s)	0.339	0.329	2.9	77	0.00	10.41
49 M	freon 113	0.251	0.252	-0.4	78	0.00	6.77
50 M	methacrylonitrile	0.206	0.230	-11.7	91	0.00	9.64
51	cyclohexane	0.574	0.611	-6.4	83	0.00	10.05
52 M	1,1,1-trichloroethane	0.508	0.548	-7.9	82	0.00	9.99
53 M	tert-amyl methyl ether	1.261	1.351	-7.1	87	0.00	10.48
54 I	1,4-difluorobenzene	1.000	1.000	0.0	83	0.00	10.86
55 M	Di-isobutylene			-----NA-----			
56 M	epichlorohydrin	0.021	0.024	-14.3	96	0.00	12.22
57 M	n-butyl alcohol	0.007	0.009#	-28.6#	97	0.00	11.01
58 M	carbon tetrachloride	0.278	0.301	-8.3	86	0.00	10.20
59 M	1,1-dichloropropene	0.336	0.346	-3.0	82	0.00	10.18
60 M	hexane	0.395	0.335	15.2	68	0.00	8.26
61 M	benzene	1.106	1.119	-1.2	83	0.00	10.46
62 M	Iso-octane	1.144	1.106	3.3	73	0.00	10.42
63 M	heptane	0.235	0.210	10.6	70	0.00	10.61
64 M	tert amyl alcohol			-----NA-----			
65 M	isopropyl acetate	0.681	0.685	-0.6	82	0.00	10.39
66 M	1,2-dichloroethane	0.267	0.314	-17.6	92	0.00	10.50
67 M	trichloroethene	0.248	0.260	-4.8	84	0.00	11.21
68 M	2-nitropropane	0.004	0.003#	25.0#	80	0.00	12.07
69 M	tert-amyl ethyl ether			-----NA-----			
70 M	methylcyclohexane	0.476	0.441	7.4	71	0.00	11.42
71 M	2-chloroethyl vinyl ether	0.143	0.149	-4.2	85	0.00	12.07
72 M	methyl methacrylate	0.140	0.171	-22.1#	101	0.00	11.50
73 M	1,2-dichloropropane	0.292	0.310	-6.2	85	0.00	11.50
74 M	dibromomethane	0.134	0.156	-16.4	94	0.00	11.68
75 M	bromodichloromethane	0.320	0.355	-10.9	89	0.00	11.82
76 M	cis-1,3-dichloropropene	0.446	0.486	-9.0	88	0.00	12.30
77 S	toluene-d8 (s)	0.960	0.993	-3.4	85	0.00	12.61
78 M	4-methyl-2-pentanone	0.090	0.106	-17.8	94	0.00	12.41
79 M	toluene	0.703	0.702	0.1	83	0.00	12.69
80 M	3-methyl-1-butanol	0.012	0.014	-16.7	96	0.00	12.44
81 M	trans-1,3-dichloropropene	0.384	0.415	-8.1	90	0.00	12.93
82 M	ethyl methacrylate	0.302	0.349	-15.6	96	0.00	12.90
83 M	1,1,2-trichloroethane	0.174	0.200	-14.9	93	0.00	13.17
84 M	2-hexanone	0.086	0.103	-19.8	99	0.00	13.35
85 I	chlorobenzene-d5	1.000	1.000	0.0	85	0.00	14.30
86 M	tetrachloroethene	0.228	0.230	-0.9	84	0.00	13.33
87 M	1,3-dichloropropane	0.402	0.434	-8.0	90	0.00	13.37
88 M	butyl acetate	0.187	0.210	-12.3	92	0.00	13.42
89 M	dibromochloromethane	0.259	0.289	-11.6	94	0.00	13.66
90 M	1,2-dibromoethane	0.221	0.251	-13.6	96	0.00	13.83
91 M	n-butyl ether			-----NA-----			

6.9.5  
6

## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195513.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

92 M	chlorobenzene	0.849	0.859	-1.2	85	0.00	14.33
93 M	1,1,1,2-tetrachloroethane	0.282	0.295	-4.6	87	0.00	14.41
94 M	ethylbenzene	1.465	1.423	2.9	83	0.00	14.39
	-----	True	Calc.	% Drift	-----		
95 M	m,p-xylene	40.000	41.464	-3.7	84	0.00	14.51
	-----	AvgRF	CCRF	% Dev	-----		
96 M	o-xylene	0.577	0.562	2.6	83	0.00	14.98
97 M	styrene	0.968	0.955	1.3	84	0.00	15.00
98 M	bromoform	0.173	0.198	-14.5	97	0.00	15.32
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	84	0.00	16.93
100 M	isopropylbenzene	2.657	2.616	1.5	82	0.00	15.36
	-----	True	Calc.	% Drift	-----		
101 m	cyclohexanone	200.000	319.165	-59.6#	123	0.00	15.59
	-----	AvgRF	CCRF	% Dev	-----		
102 S	4-bromofluorobenzene (s)	0.756	0.743	1.7	82	0.00	15.61
103 M	bromobenzene	0.687	0.710	-3.3	88	0.00	15.83
104 M	1,1,2,2-tetrachloroethane	0.617	0.683	-10.7	94	0.00	15.74
105 M	trans-1,4-dichloro-2-bute	0.172	0.189	-9.9	90	0.00	15.79
106 M	1,2,3-trichloropropane	0.138	0.153	-10.9	95	0.00	15.83
107 M	n-propylbenzene	3.315	3.179	4.1	81	0.00	15.83
108 M	2-chlorotoluene	0.670	0.663	1.0	84	0.00	16.01
109 M	4-chlorotoluene	2.120	1.992	6.0	83	0.00	16.12
110 m	p-ethyltoluene			NA			
111 M	1,3,5-trimethylbenzene	2.238	2.205	1.5	81	0.00	16.00
112 M	tert-butylbenzene	1.901	1.890	0.6	82	0.00	16.39
113 M	pentachloroethane	0.406	0.428	-5.4	88	0.00	16.50
114 M	1,2,4-trimethylbenzene	2.353	2.312	1.7	82	0.00	16.45
115 M	sec-butylbenzene	2.995	2.935	2.0	79	0.00	16.64
116 M	1,3-dichlorobenzene	1.341	1.349	-0.6	86	0.00	16.87
117 M	p-isopropyltoluene	2.494	2.435	2.4	81	0.00	16.77
118 M	1,2,3-trimethylbenzene			NA			
119 M	1,4-dichlorobenzene	1.367	1.356	0.8	86	0.00	16.96
120 m	p-diethylbenzene			NA			
121 M	1,2-dichlorobenzene	1.290	1.309	-1.5	87	0.00	17.41
122 M	n-butylbenzene	1.433	1.370	4.4	78	0.00	17.24
123 m	1,2,4,5-tetramethylbenzen			NA			
	-----	True	Calc.	% Drift	-----		
124 M	1,2-dibromo-3-chloropropa	20.000	24.782	-23.9#	96	0.00	18.28
	-----	AvgRF	CCRF	% Dev	-----		
125 M	1,3,5-trichlorobenzene	1.111	1.080	2.8	82	0.00	18.46
	-----	True	Calc.	% Drift	-----		
126 M	1,2,4-trichlorobenzene	20.000	21.668	-8.3	82	0.00	19.19
	-----	AvgRF	CCRF	% Dev	-----		
127 M	hexachlorobutadiene	0.545	0.539	1.1	79	0.00	19.30
	-----	True	Calc.	% Drift	-----		
128 M	naphthalene	20.000	20.264	-1.3	90	0.00	19.53
129 M	1,2,3-trichlorobenzene	20.000	18.967	5.2	84	0.00	19.80
	-----	AvgRF	CCRF	% Dev	-----		
130 M	hexachloroethane	0.401	0.427	-6.5	85	0.00	17.69

6.9  
6

# Continuing Calibration Summary

Page 4 of 4

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195513.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

131	Ethylenimine	-----NA-----
132	Bis(chloromethyl)ether	-----NA-----
133	2-methylnaphthalene	-----NA-----

(#) = Out of Range  
A194761.D MA7347.M

SPCC's out = 0 CCC's out = 0  
Tue Jun 11 13:01:24 2013 MSA

6.9.5  
6

# Continuing Calibration Summary

Page 1 of 4

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195535.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\A195535.D Vial: 100  
 Acq On : 11 Jun 2013 12:28 am Operator: Oksanat  
 Sample : cc7347-50 Inst : MSA  
 Misc : MS49400,VA7376,5,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	86	0.00	7.57
2 M	1,4-dioxane	0.093	0.093	0.0	87	0.00	11.64
3 M	ethanol			-----NA-----			
4 M	tertiary butyl alcohol	1.100	1.093	0.6	92	0.01	7.70
5 I	pentafluorobenzene	1.000	1.000	0.0	84	0.01	9.91
6	chlorotrifluoroethene			-----NA-----			
7 M	chlorodifluoromethane	0.381	0.322	15.5	85	0.00	3.98
8 M	dichlorodifluoromethane	0.473	0.423	10.6	83	0.01	3.96
9 M	chloromethane	0.676	0.694	-2.7	97	0.02	4.31
10 M	vinyl chloride	0.605	0.632	-4.5	96	0.02	4.58
		-----True-----	Calc.	% Drift			
11 M	bromomethane	50.000	52.428	-4.9	91	0.02	5.26
		AvgRF	CCRF	% Dev			
12 M	chloroethane	0.289	0.285	1.4	88	0.02	5.45
13	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	0.520	0.498	4.2	88	0.01	5.93
15 m	pentane			-----NA-----			
16 M	ethyl ether	0.222	0.216	2.7	89	0.01	6.36
17	Freon 123a			-----NA-----			
18 M	acrolein	0.063	0.064	-1.6	88	0.01	6.66
19 M	1,1-dichloroethene	0.362	0.353	2.5	93	0.02	6.82
20 M	acetone	0.094	0.091	3.2	88	0.00	6.90
21 M	allyl chloride	0.239	0.245	-2.5	89	0.01	7.39
22 M	acetonitrile	0.033	0.030	9.1	83	0.00	7.39
23 M	iodomethane	0.650	0.695	-6.9	93	0.01	7.12
24 M	iso-butyl alcohol	0.013	0.013	0.0	87	0.01	10.24
25 M	carbon disulfide	1.370	1.409	-2.8	93	0.01	7.23
		-----True-----	Calc.	% Drift			
26 M	methylene chloride	50.000	52.767	-5.5	92	0.01	7.61
		AvgRF	CCRF	% Dev			
27 M	methyl acetate	0.269	0.253	5.9	87	0.00	7.38
28 M	methyl tert butyl ether	1.084	1.106	-2.0	90	0.00	7.93
29 M	trans-1,2-dichloroethene	0.404	0.401	0.7	92	0.02	7.99
30 M	di-isopropyl ether	1.640	1.562	4.8	89	0.01	8.55
31 m	t-butyl formate	0.335	0.340	-1.5	91	0.01	9.79
32 m	3,3-dimethyl-1-butanol	0.039	0.039	0.0	85	0.01	13.56
33 M	ethyl tert-butyl ether	1.379	1.391	-0.9	92	0.02	9.04

6.6.9  
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## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: A195535.D

34 M	2-butanone	0.033	0.035	-6.1	85	0.01	9.35
35 M	1,1-dichloroethane	0.772	0.792	-2.6	92	0.01	8.60
36 M	chloroprene	0.576	0.544	5.6	89	0.01	8.70
37 M	acrylonitrile	0.114	0.114	0.0	86	0.01	7.98
38 M	vinyl acetate	0.054	0.055	-1.9	92	0.02	8.58
39 M	ethyl acetate	0.046	0.045	2.2	89	0.01	9.36
40	ethyl acrylate			-----NA-----			
41 M	2,2-dichloropropane	0.558	0.546	2.2	89	0.01	9.37
42 M	cis-1,2-dichloroethene	0.434	0.445	-2.5	90	0.01	9.38
43 M	propionitrile	0.045	0.044	2.2	85	0.01	9.48
44 M	bromochloromethane	0.186	0.195	-4.8	90	0.01	9.71
45 M	tetrahydrofuran	0.126	0.118	6.3	84	0.01	9.74
46 M	chloroform	0.676	0.690	-2.1	93	0.00	9.77
47 S	dibromofluoromethane (s)	0.328	0.342	-4.3	97	0.01	9.98
48 S	1,2-dichloroethane-d4 (s)	0.339	0.320	5.6	89	0.01	10.43
49 M	freon 113	0.251	0.234	6.8	88	0.02	6.79
50 M	methacrylonitrile	0.206	0.201	2.4	86	0.01	9.66
51	cyclohexane	0.574	0.599	-4.4	93	0.02	10.07
52 M	1,1,1-trichloroethane	0.508	0.535	-5.3	93	0.01	10.01
53 M	tert-amyl methyl ether	1.261	1.222	3.1	92	0.01	10.50
54 I	1,4-difluorobenzene	1.000	1.000	0.0	85	0.01	10.88
55 M	Di-isobutylene			-----NA-----			
56 M	epichlorohydrin	0.021	0.020	4.8	87	0.01	12.23
57 M	n-butyl alcohol	0.007	0.007#	0.0	88	0.00	11.02
58 M	carbon tetrachloride	0.278	0.293	-5.4	95	0.01	10.22
59 M	1,1-dichloropropene	0.336	0.338	-0.6	91	0.01	10.20
60 M	hexane	0.395	0.304	23.0#	78	0.01	8.27
61 M	benzene	1.106	1.073	3.0	90	0.01	10.48
62 M	Iso-octane	1.144	1.038	9.3	86	0.01	10.44
63 M	heptane	0.235	0.206	12.3	85	0.01	10.62
64 M	tert amyl alcohol			-----NA-----			
65 M	isopropyl acetate	0.681	0.567	16.7	82	0.01	10.40
66 M	1,2-dichloroethane	0.267	0.292	-9.4	92	0.01	10.52
67 M	trichloroethene	0.248	0.251	-1.2	92	0.01	11.23
68 M	2-nitropropane	0.004	0.004#	0.0	81	0.02	12.09
69 M	tert-amyl ethyl ether			-----NA-----			
70 M	methylcyclohexane	0.476	0.425	10.7	86	0.01	11.43
71 M	2-chloroethyl vinyl ether	0.143	0.133	7.0	86	0.00	12.08
72 M	methyl methacrylate	0.140	0.145	-3.6	89	0.01	11.51
73 M	1,2-dichloropropane	0.292	0.295	-1.0	90	0.01	11.52
74 M	dibromomethane	0.134	0.139	-3.7	91	0.01	11.70
75 M	bromodichloromethane	0.320	0.333	-4.1	93	0.00	11.83
76 M	cis-1,3-dichloropropene	0.446	0.448	-0.4	89	0.00	12.32
77 S	toluene-d8 (s)	0.960	0.996	-3.8	104	0.01	12.62
78 M	4-methyl-2-pentanone	0.090	0.088	2.2	86	0.02	12.43
79 M	toluene	0.703	0.688	2.1	94	0.00	12.70
80 M	3-methyl-1-butanol	0.012	0.011	8.3	90	0.01	12.45
81 M	trans-1,3-dichloropropene	0.384	0.382	0.5	90	0.00	12.94
82 M	ethyl methacrylate	0.302	0.314	-4.0	92	0.01	12.91
83 M	1,1,2-trichloroethane	0.174	0.181	-4.0	91	0.00	13.18
84 M	2-hexanone	0.086	0.085	1.2	87	0.00	13.36
85 I	chlorobenzene-d5	1.000	1.000	0.0	87	0.01	14.32
86 M	tetrachloroethene	0.228	0.230	-0.9	95	0.01	13.34
87 M	1,3-dichloropropane	0.402	0.397	1.2	90	0.01	13.39
88 M	butyl acetate	0.187	0.176	5.9	91	0.01	13.43
89 M	dibromochloromethane	0.259	0.269	-3.9	94	0.01	13.68
90 M	1,2-dibromoethane	0.221	0.228	-3.2	93	0.00	13.85
91 M	n-butyl ether			-----NA-----			

6.9.6

## Continuing Calibration Summary

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195535.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

92 M	chlorobenzene	0.849	0.827	2.6	93	0.01	14.35
93 M	1,1,1,2-tetrachloroethane	0.282	0.284	-0.7	92	0.01	14.42
94 M	ethylbenzene	1.465	1.385	5.5	92	0.00	14.40
		-----	True	Calc.	% Drift		
95 M	m,p-xylene	100.000	103.613	-3.6	92	0.01	14.52
		-----	AvgRF	CCRF	% Dev		
96 M	o-xylene	0.577	0.553	4.2	93	0.01	15.00
97 M	styrene	0.968	0.940	2.9	92	0.01	15.01
98 M	bromoform	0.173	0.178	-2.9	93	0.00	15.33
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	86	0.01	16.95
100 M	isopropylbenzene	2.657	2.582	2.8	92	0.01	15.38
		-----	True	Calc.	% Drift		
101 m	cyclohexanone	500.000	267.276	46.5#	59	0.00	15.60
		-----	AvgRF	CCRF	% Dev		
102 S	4-bromofluorobenzene (s)	0.756	0.754	0.3	98	0.00	15.62
103 M	bromobenzene	0.687	0.677	1.5	94	0.01	15.85
104 M	1,1,2,2-tetrachloroethane	0.617	0.599	2.9	88	0.00	15.75
105 M	trans-1,4-dichloro-2-bute	0.172	0.157	8.7	82	0.00	15.80
106 M	1,2,3-trichloropropane	0.138	0.138	0.0	93	0.00	15.84
107 M	n-propylbenzene	3.315	3.122	5.8	91	0.01	15.84
108 M	2-chlorotoluene	0.670	0.664	0.9	94	0.01	16.02
109 M	4-chlorotoluene	2.120	1.969	7.1	92	0.00	16.13
110 m	p-ethyltoluene			-----NA-----			
111 M	1,3,5-trimethylbenzene	2.238	2.230	0.4	93	0.01	16.01
112 M	tert-butylbenzene	1.901	1.888	0.7	93	0.01	16.41
113 M	pentachloroethane	0.406	0.411	-1.2	92	0.00	16.52
114 M	1,2,4-trimethylbenzene	2.353	2.283	3.0	92	0.01	16.46
115 M	sec-butylbenzene	2.995	2.952	1.4	91	0.01	16.65
116 M	1,3-dichlorobenzene	1.341	1.292	3.7	91	0.00	16.88
117 M	p-isopropyltoluene	2.494	2.419	3.0	91	0.00	16.78
118 M	1,2,3-trimethylbenzene			-----NA-----			
119 M	1,4-dichlorobenzene	1.367	1.305	4.5	90	0.00	16.97
120 m	p-diethylbenzene			-----NA-----			
121 M	1,2-dichlorobenzene	1.290	1.257	2.6	91	0.01	17.42
122 M	n-butylbenzene	1.433	1.306	8.9	84	0.01	17.25
123 m	1,2,4,5-tetramethylbenzen			-----NA-----			
		-----	True	Calc.	% Drift		
124 M	1,2-dibromo-3-chloropropa	50.000	64.060	-28.1#	89	0.01	18.30
		-----	AvgRF	CCRF	% Dev		
125 M	1,3,5-trichlorobenzene	1.111	1.042	6.2	88	0.01	18.47
		-----	True	Calc.	% Drift		
126 M	1,2,4-trichlorobenzene	50.000	59.061	-18.1	88	0.00	19.20
		-----	AvgRF	CCRF	% Dev		
127 M	hexachlorobutadiene	0.545	0.541	0.7	91	0.01	19.32
		-----	True	Calc.	% Drift		
128 M	naphthalene	50.000	55.000	-10.0	90	0.00	19.54
129 M	1,2,3-trichlorobenzene	50.000	55.856	-11.7	90	0.00	19.81
		-----	AvgRF	CCRF	% Dev		
130 M	hexachloroethane	0.401	0.425	-6.0	93	0.01	17.70

6.6.9  
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# Continuing Calibration Summary

Page 4 of 4

Job Number: JB38711

Sample: VA7376-CC7347

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: A195535.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

131	Ethylenimine	-----NA-----
132	Bis(chloromethyl)ether	-----NA-----
133	2-methylnaphthalene	-----NA-----

(#) = Out of Range  
A194762.D MA7347.M

SPCC's out = 0 CCC's out = 0  
Tue Jun 11 13:12:42 2013 MSA

6.9.6



## GC/MS Volatiles

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### Raw Data

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## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195501.D Vial: 100  
 Acq On : 9 Jun 2013 8:52 am Operator: Oksanat  
 Sample : jb38711-1 Inst : MSA  
 Misc : MS49475,VA7375,6.9,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 11:06 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.55	65	73465	500.00	ug/L	-0.01
5) pentafluorobenzene	9.89	168	203710	50.00	ug/L	-0.01
54) 1,4-difluorobenzene	10.85	114	328758	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.29	117	304200	50.00	ug/L	-0.01
99) 1,4-dichlorobenzene-d4	16.93	152	153694	50.00	ug/L	-0.01

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.96	113	72447	54.25	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	108.50%
48) 1,2-dichloroethane-d4 (s)	10.40	65	72282	52.39	ug/L	-0.01
Spiked Amount	50.000	Range	74 - 122	Recovery	=	104.78%
77) toluene-d8 (s)	12.60	98	327578	51.88	ug/L	-0.01
Spiked Amount	50.000	Range	80 - 120	Recovery	=	103.76%
102) 4-bromofluorobenzene (s)	15.61	95	117495	50.56	ug/L	-0.01
Spiked Amount	50.000	Range	76 - 116	Recovery	=	101.12%

## Target Compounds

				Qvalue
61) benzene	10.46	78	5590	0.77 ug/L 92
79) toluene	12.68	92	2293	0.50 ug/L 89
96) o-xylene	14.98	106	1335	0.38 ug/L 90

(#) = qualifier out of range (m) = manual integration  
 A195501.D MA7347.M Mon Jun 10 11:06:31 2013 MSA

Page 1

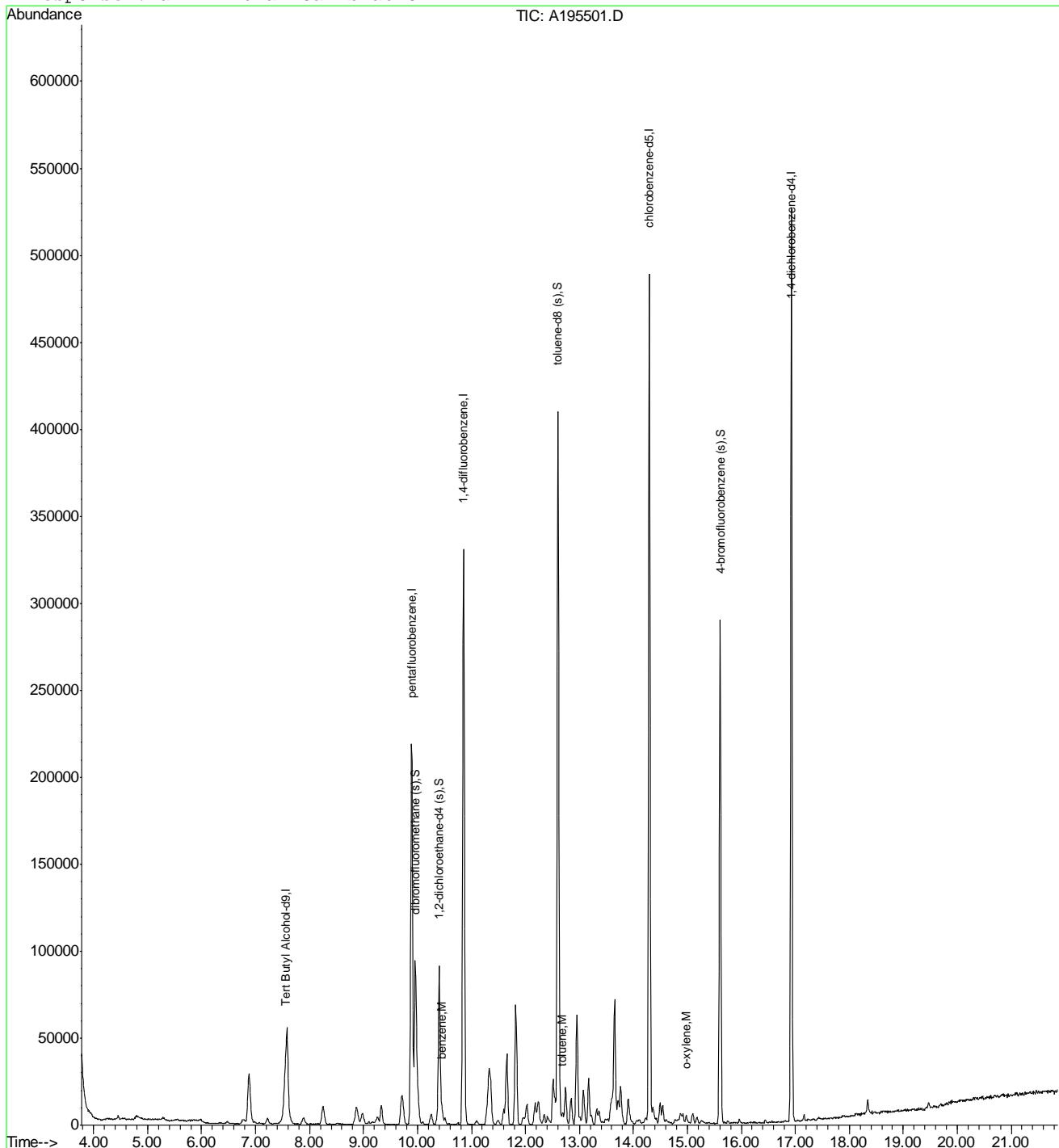
## Quantitation Report

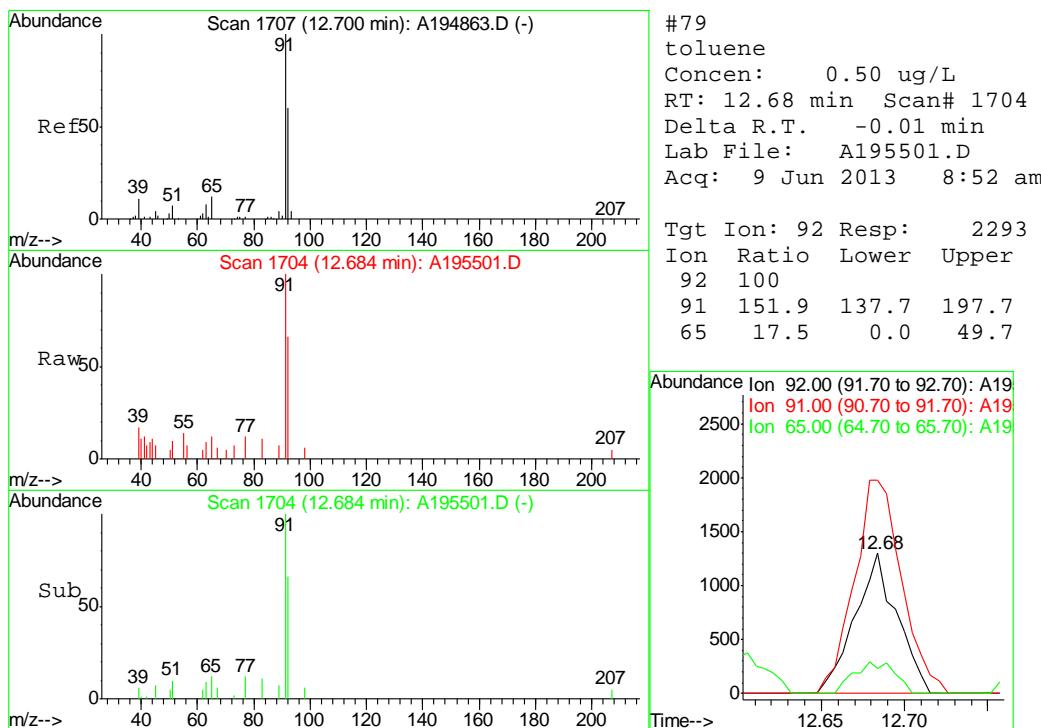
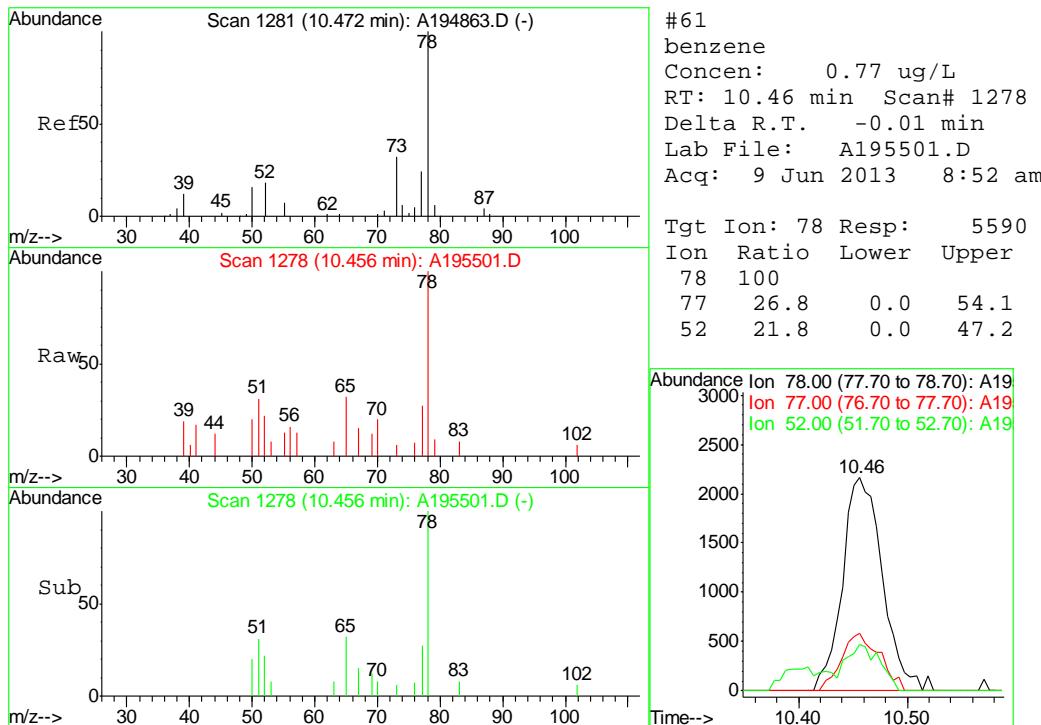
Data File : C:\HPCHEM\1\DATA\A195501.D  
 Acq On : 9 Jun 2013 8:52 am  
 Sample : jb38711-1  
 Misc : MS49475,VA7375,6.9,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 11:06 2013

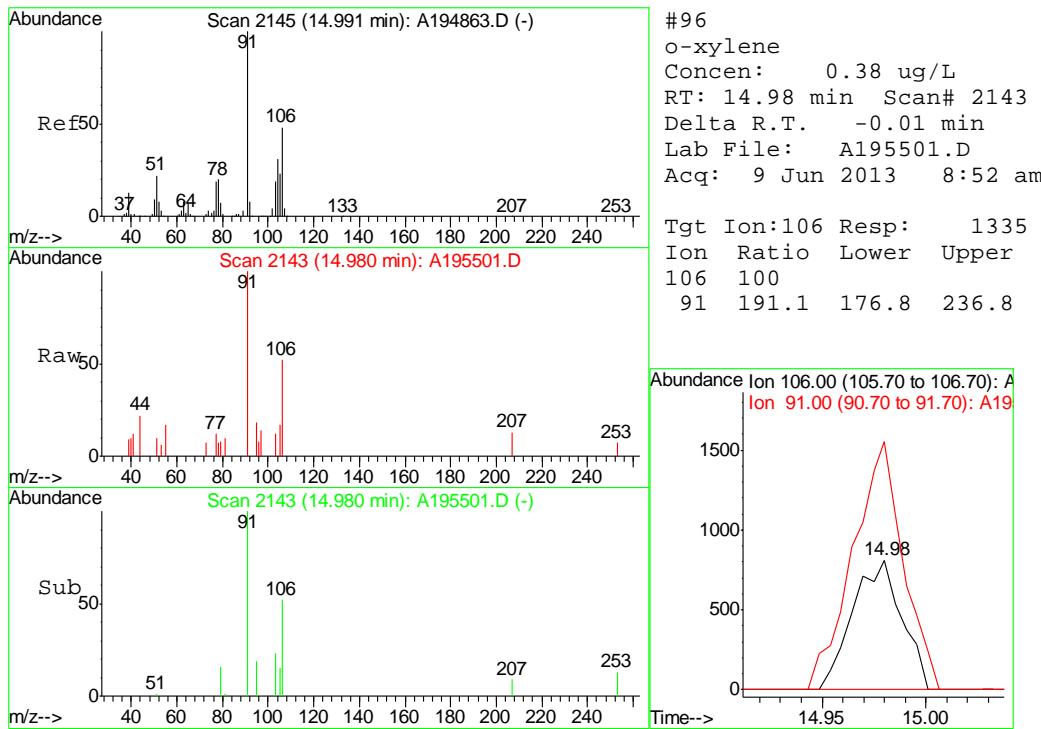
Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration







## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195498.D Vial: 100  
 Acq On : 9 Jun 2013 7:08 am Operator: Oksanat  
 Sample : jb38711-2 Inst : MSA  
 Misc : MS49475,VA7375,6.3,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:54 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.55	65	75397	500.00	ug/L	-0.01
5) pentafluorobenzene	9.89	168	204453	50.00	ug/L	-0.01
54) 1,4-difluorobenzene	10.85	114	327433	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.30	117	301929	50.00	ug/L	-0.01
99) 1,4-dichlorobenzene-d4	16.93	152	151490	50.00	ug/L	0.00

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.96	113	72218	53.88	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	107.76%
48) 1,2-dichloroethane-d4 (s)	10.40	65	70950	51.24	ug/L	-0.01
Spiked Amount	50.000	Range	74 - 122	Recovery	=	102.48%
77) toluene-d8 (s)	12.61	98	327525	52.08	ug/L	0.00
Spiked Amount	50.000	Range	80 - 120	Recovery	=	104.16%
102) 4-bromofluorobenzene (s)	15.61	95	117036	51.09	ug/L	-0.01
Spiked Amount	50.000	Range	76 - 116	Recovery	=	102.18%

## Target Compounds

				Qvalue
61) benzene	10.46	78	3354	0.46 ug/L 92
114) 1,2,4-trimethylbenzene	16.44	105	2517	0.35 ug/L 96

(#) = qualifier out of range (m) = manual integration  
 A195498.D MA7347.M Mon Jun 10 11:00:09 2013 MSA

Page 1

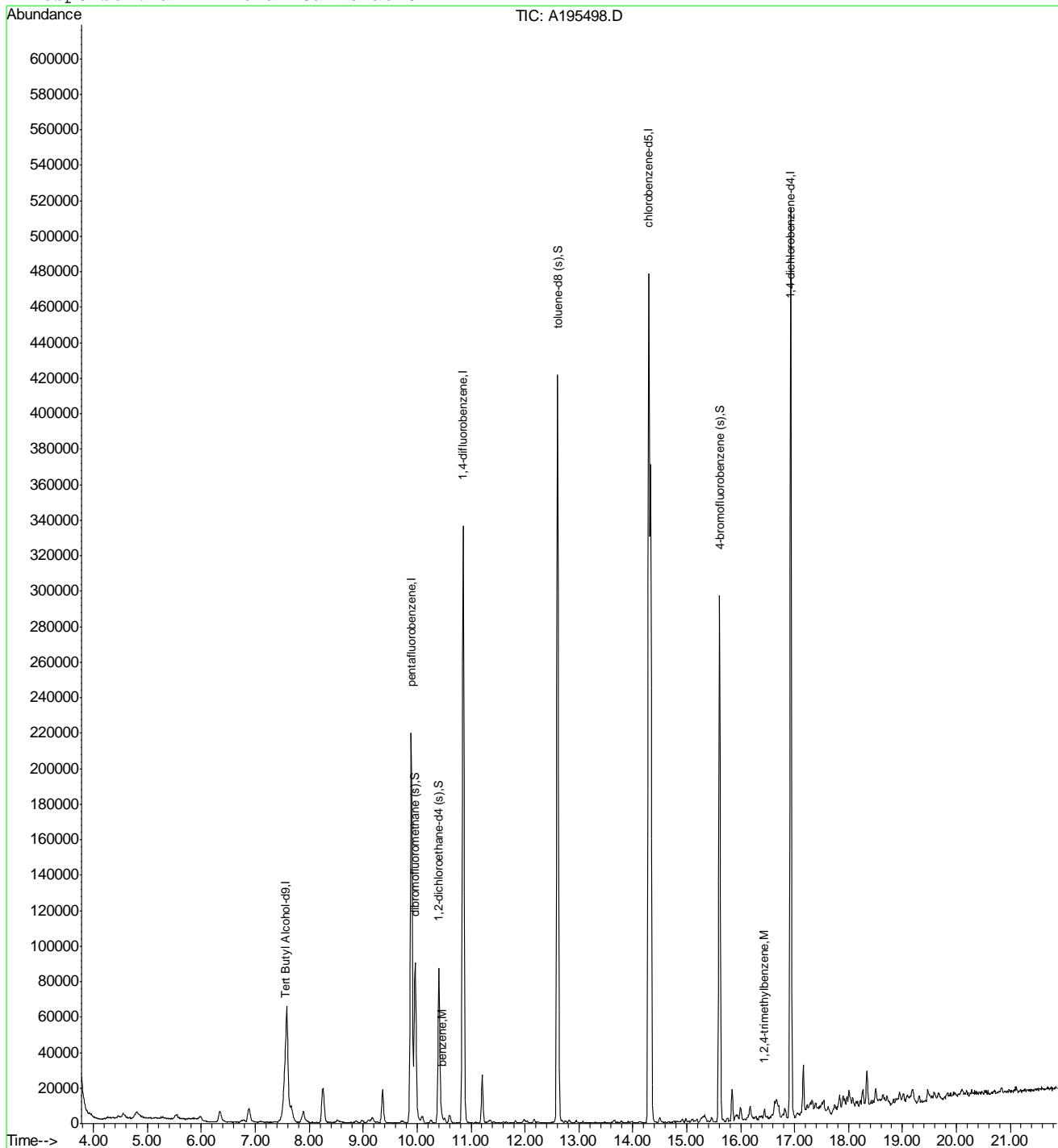
## Quantitation Report

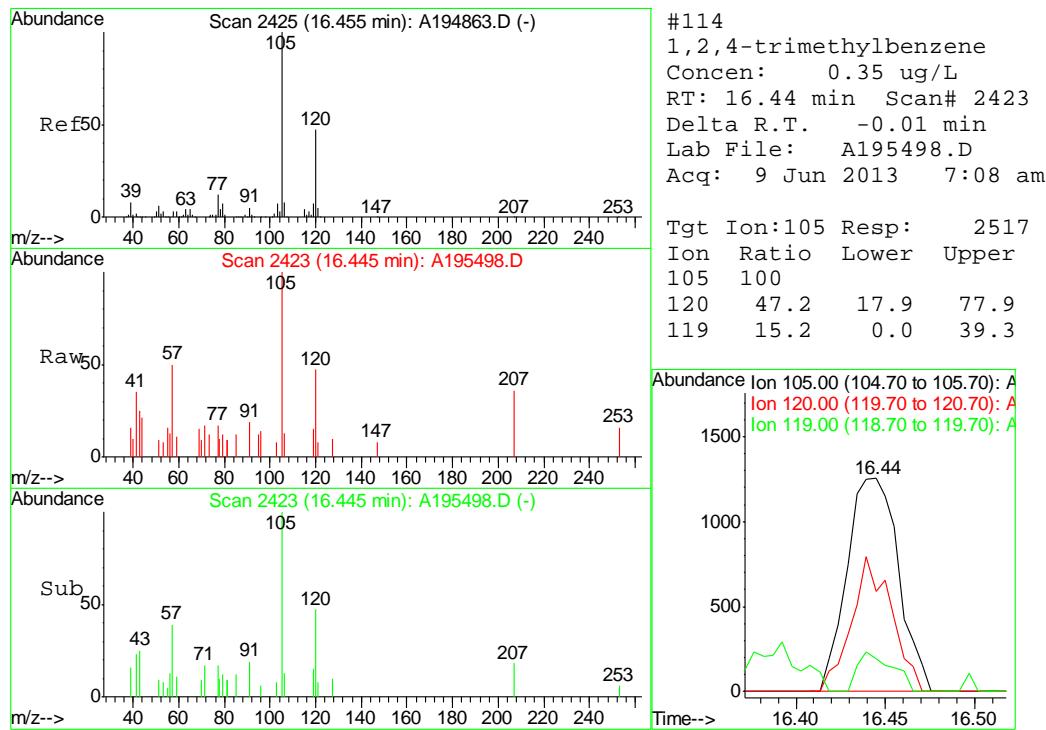
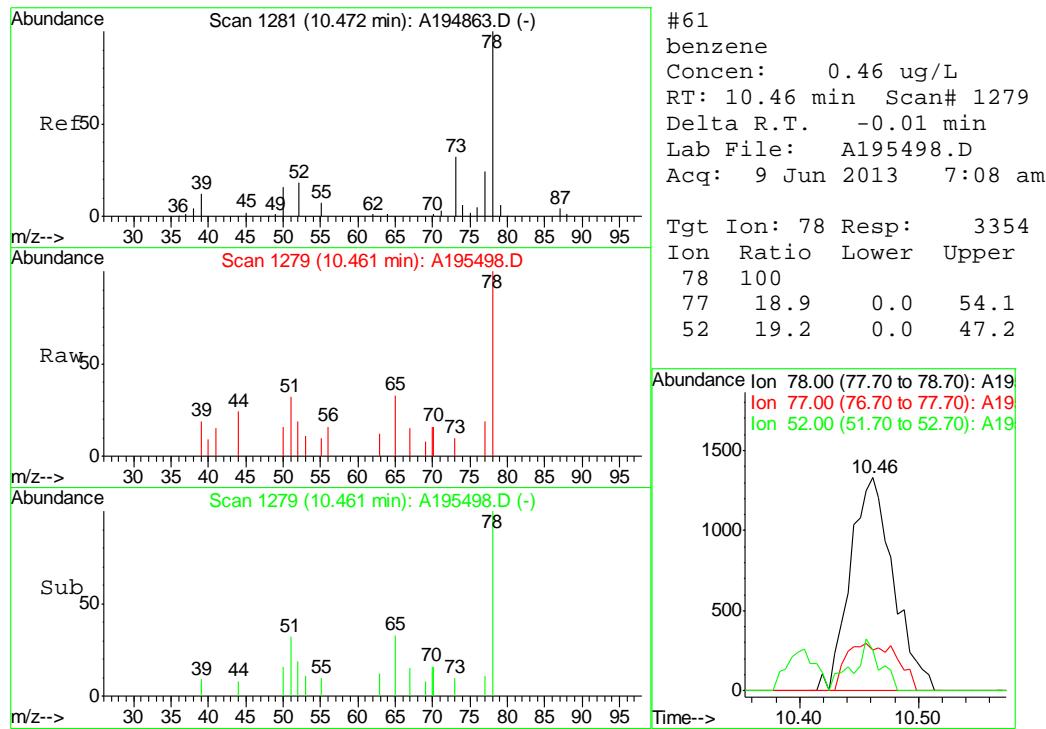
Data File : C:\HPCHEM\1\DATA\A195498.D  
 Acq On : 9 Jun 2013 7:08 am  
 Sample : jb38711-2  
 Misc : MS49475,VA7375,6.3,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:54 2013

Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration





## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195499.D Vial: 100  
 Acq On : 9 Jun 2013 7:38 am Operator: Oksanat  
 Sample : jb38711-3 Inst : MSA  
 Misc : MS49475,VA7375,5.7,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:54 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.55	65	75911	500.00	ug/L	-0.01
5) pentafluorobenzene	9.89	168	203282	50.00	ug/L	-0.01
54) 1,4-difluorobenzene	10.85	114	323812	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.29	117	298902	50.00	ug/L	-0.01
99) 1,4-dichlorobenzene-d4	16.93	152	153721	50.00	ug/L	-0.01

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.96	113	72680	54.54	ug/L	-0.01
Spiked Amount	50.000	Range	80 - 119	Recovery	=	109.08%
48) 1,2-dichloroethane-d4 (s)	10.40	65	71546	51.97	ug/L	-0.02
Spiked Amount	50.000	Range	74 - 122	Recovery	=	103.94%
77) toluene-d8 (s)	12.61	98	324779	52.22	ug/L	0.00
Spiked Amount	50.000	Range	80 - 120	Recovery	=	104.44%
102) 4-bromofluorobenzene (s)	15.61	95	118401	50.94	ug/L	-0.01
Spiked Amount	50.000	Range	76 - 116	Recovery	=	101.88%

Target Compounds	Qvalue
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(#) = qualifier out of range (m) = manual integration  
 A195499.D MA7347.M Mon Jun 10 11:00:15 2013 MSA

Page 1

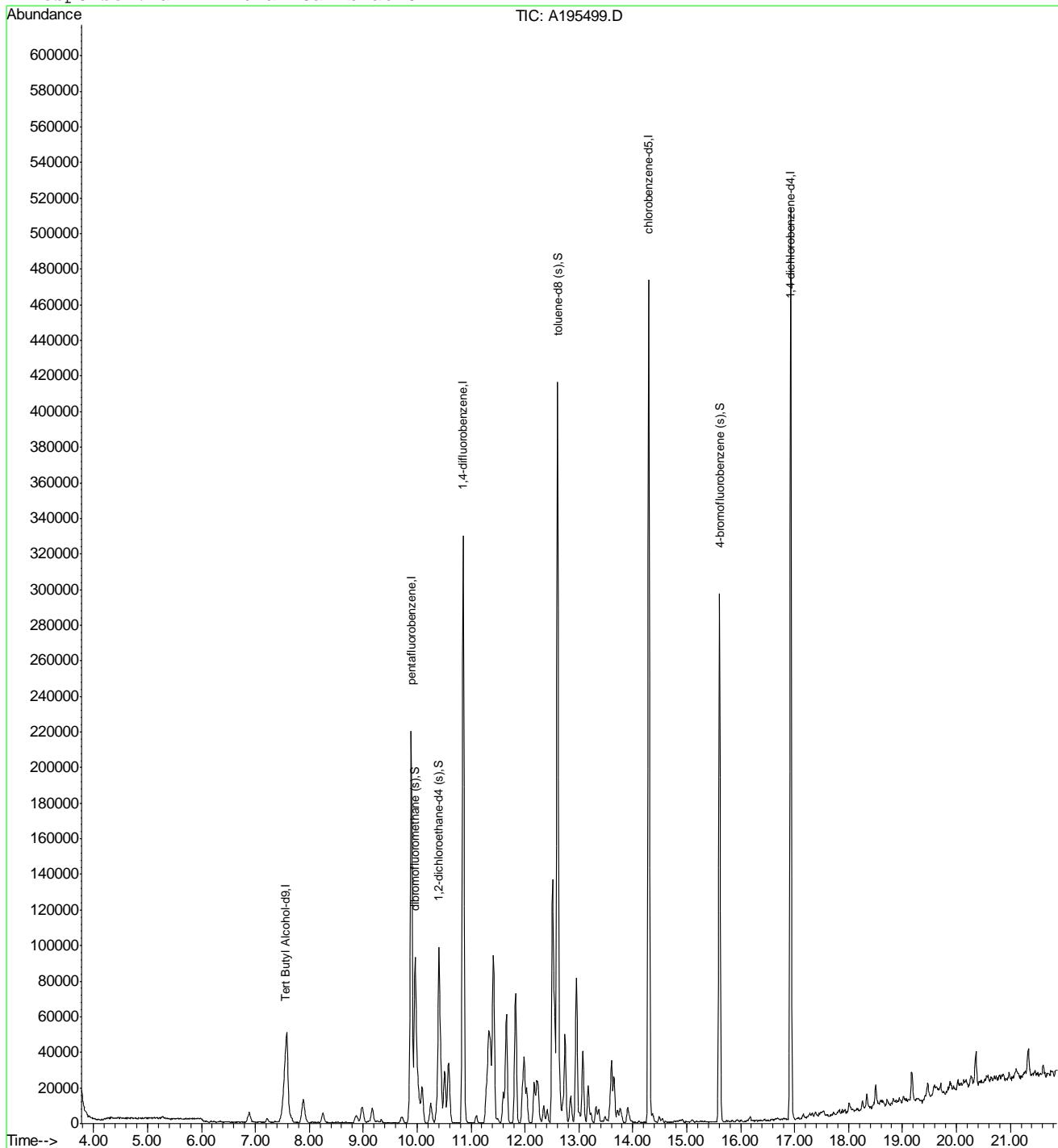
## Quantitation Report

Data File : C:\HPCHEM\1\DATA\A195499.D  
 Acq On : 9 Jun 2013 7:38 am  
 Sample : jb38711-3  
 Misc : MS49475,VA7375,5.7,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:54 2013

Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195500.D Vial: 100  
 Acq On : 9 Jun 2013 8:22 am Operator: Oksanat  
 Sample : jb38711-4 Inst : MSA  
 Misc : MS49475,VA7375,6.5,,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:55 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.56	65	79660	500.00	ug/L	0.00
5) pentafluorobenzene	9.89	168	201085	50.00	ug/L	-0.01
54) 1,4-difluorobenzene	10.85	114	317750	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.29	117	297522	50.00	ug/L	-0.01
99) 1,4-dichlorobenzene-d4	16.93	152	151154	50.00	ug/L	-0.01

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.96	113	66237	50.25	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	100.50%
48) 1,2-dichloroethane-d4 (s)	10.40	65	69792	51.25	ug/L	-0.02
Spiked Amount	50.000	Range	74 - 122	Recovery	=	102.50%
77) toluene-d8 (s)	12.60	98	319748	52.40	ug/L	-0.01
Spiked Amount	50.000	Range	80 - 120	Recovery	=	104.80%
102) 4-bromofluorobenzene (s)	15.60	95	116412	50.93	ug/L	-0.02
Spiked Amount	50.000	Range	76 - 116	Recovery	=	101.86%

Target Compounds	Qvalue
------------------	--------

(#) = qualifier out of range (m) = manual integration  
 A195500.D MA7347.M Mon Jun 10 11:00:18 2013 MSA

Page 1

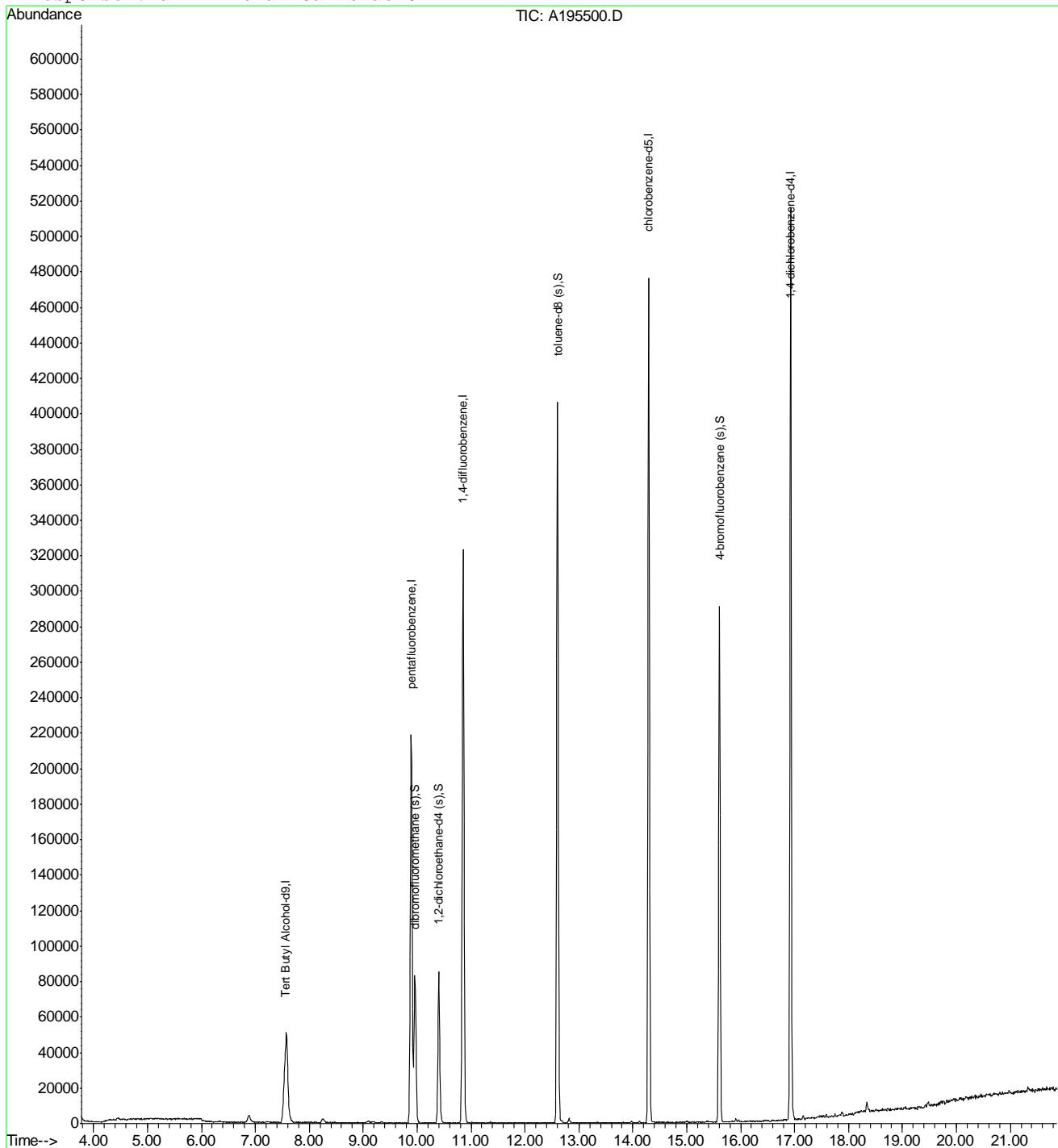
## Quantitation Report

Data File : C:\HPCHEM\1\DATA\A195500.D  
 Acq On : 9 Jun 2013 8:22 am  
 Sample : jb38711-4  
 Misc : MS49475,VA7375,6.5,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:55 2013

Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195525.D Vial: 100  
 Acq On : 10 Jun 2013 7:03 pm Operator: Oksanat  
 Sample : jb38711-5 Inst : MSA  
 Misc : MS49475,VA7376,6.9,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 11 15:05 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.57	65	65637	500.00	ug/L	0.00
5) pentafluorobenzene	9.91	168	174127	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.87	114	272348	50.00	ug/L	0.00
85) chlorobenzene-d5	14.31	117	256031	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	16.94	152	130361	50.00	ug/L	0.00

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.97	113	60885	53.34	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	106.68%
48) 1,2-dichloroethane-d4 (s)	10.41	65	59946	50.83	ug/L	0.00
Spiked Amount	50.000	Range	74 - 122	Recovery	=	101.66%
77) toluene-d8 (s)	12.62	98	274368	52.46	ug/L	0.00
Spiked Amount	50.000	Range	80 - 120	Recovery	=	104.92%
102) 4-bromofluorobenzene (s)	15.62	95	102092	51.79	ug/L	0.00
Spiked Amount	50.000	Range	76 - 116	Recovery	=	103.58%

## Target Compounds

					Qvalue
20) acetone	6.90	43	3707	11.32	ug/L 94
26) methylene chloride	7.60	84	16605	8.94	ug/L 96
42) cis-1,2-dichloroethene	9.37	96	3188	2.11	ug/L 90
61) benzene	10.47	78	936	0.16	ug/L 78
67) trichloroethene	11.22	95	3758	2.78	ug/L 90
92) chlorobenzene	14.34	112	62599	14.40	ug/L 98

(#) = qualifier out of range (m) = manual integration  
 A195525.D MA7347.M Tue Jun 11 15:05:34 2013 MSA

Page 1

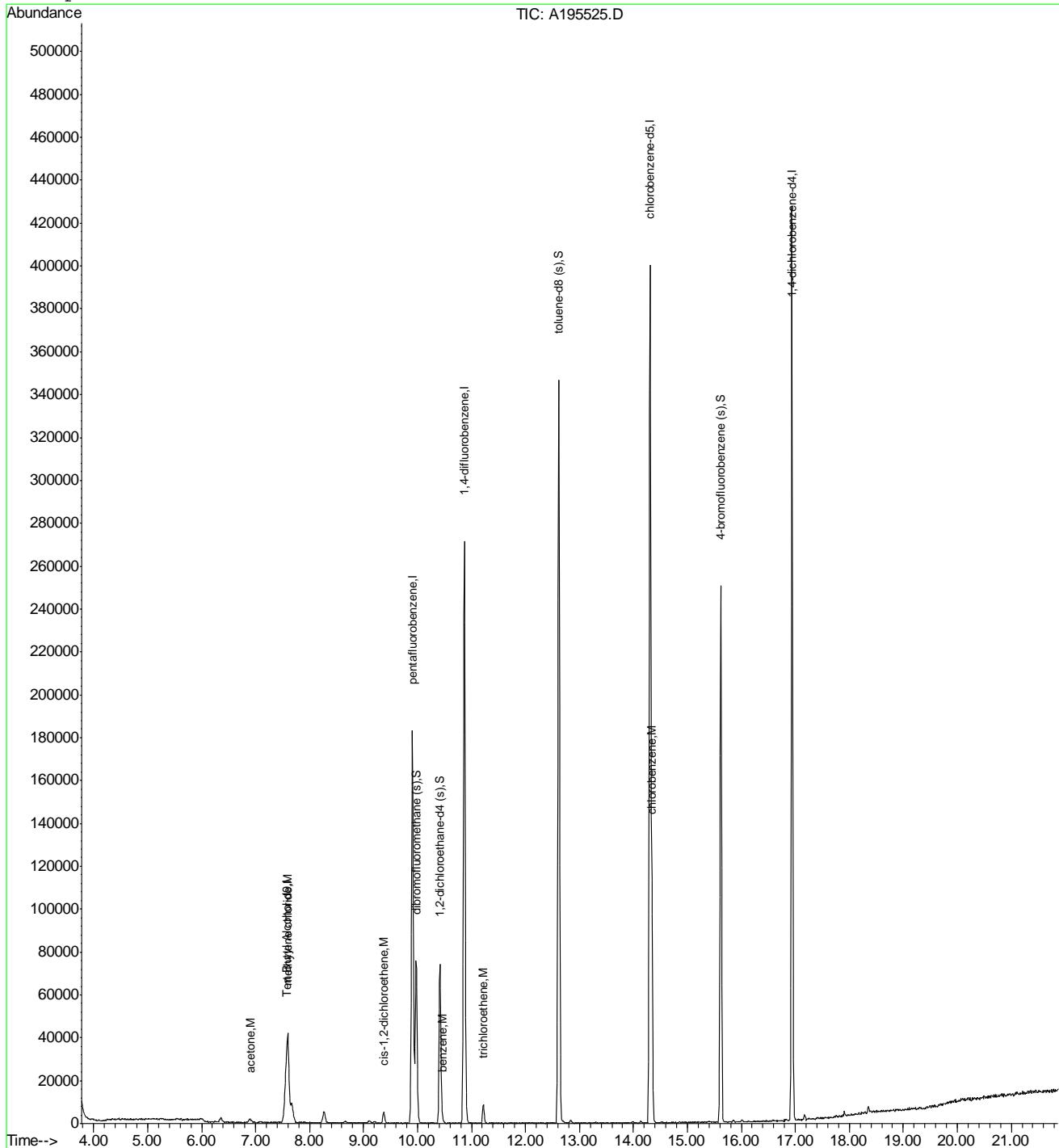
## Quantitation Report

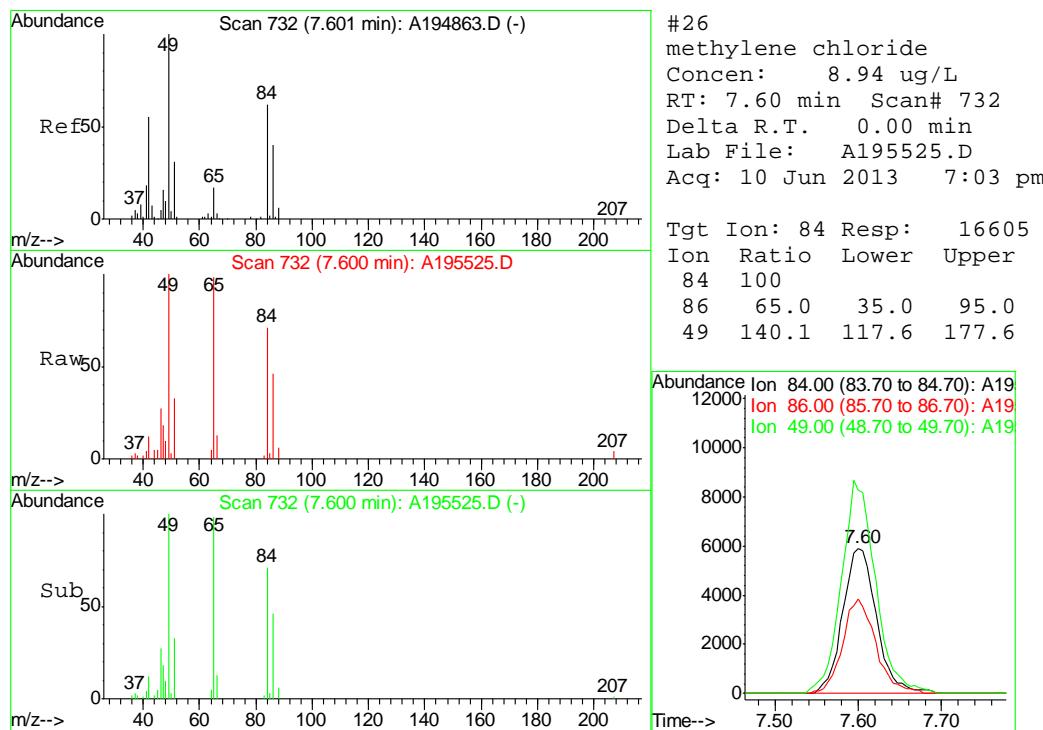
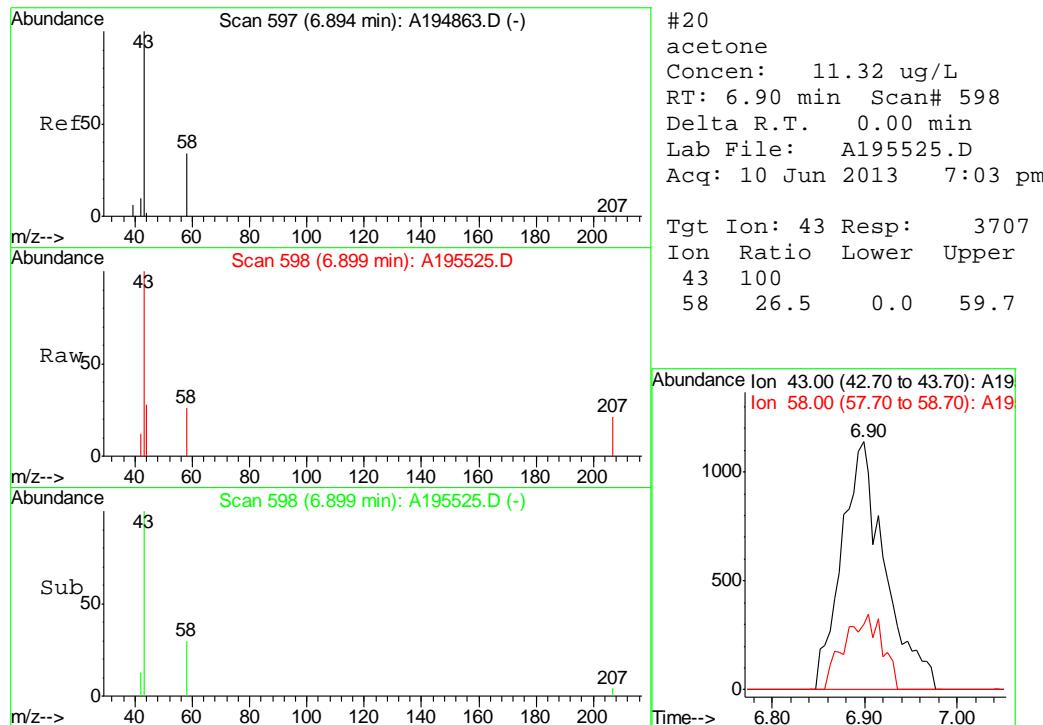
Data File : C:\HPCHEM\1\DATA\A195525.D  
 Acq On : 10 Jun 2013 7:03 pm  
 Sample : jb38711-5  
 Misc : MS49475,VA7376,6.9,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 11 15:05 2013

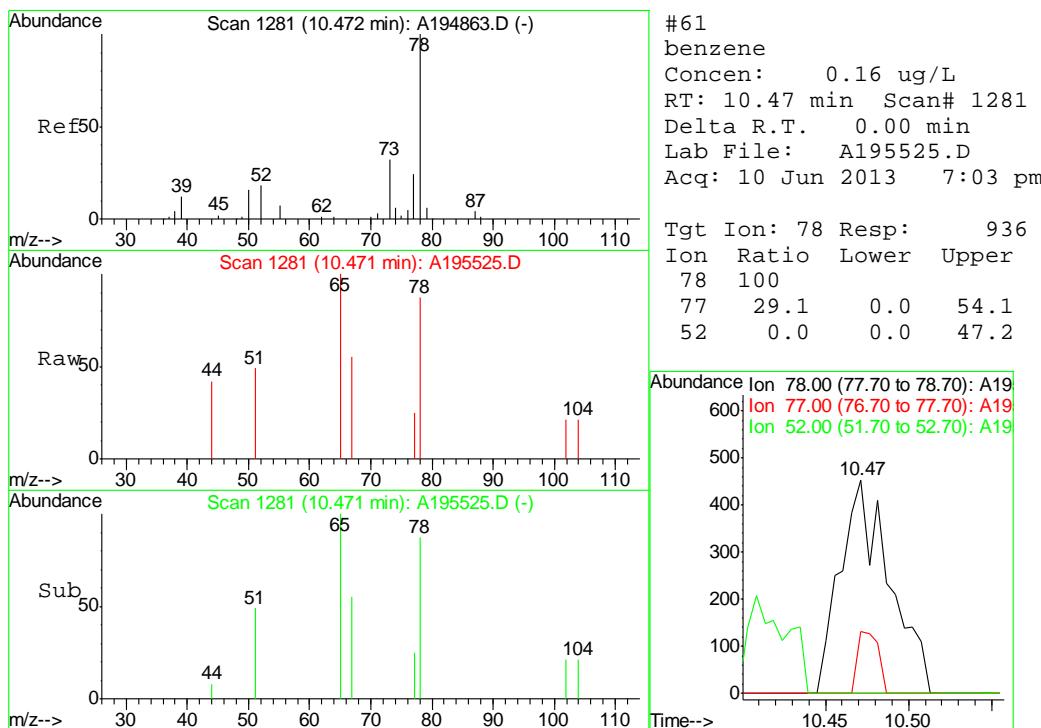
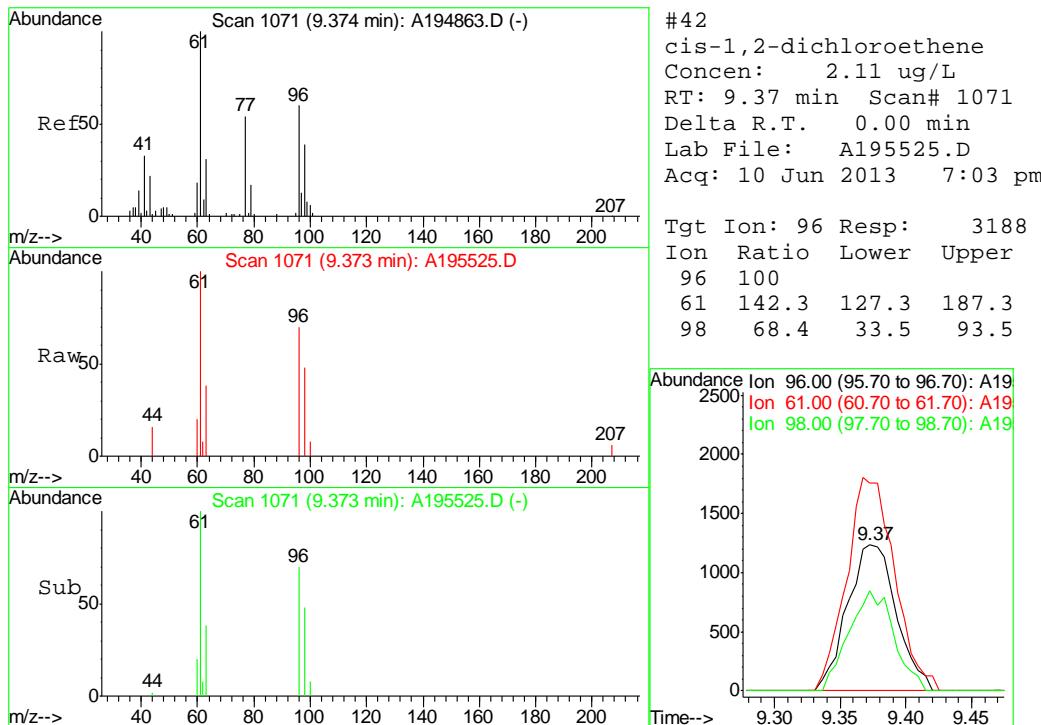
Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

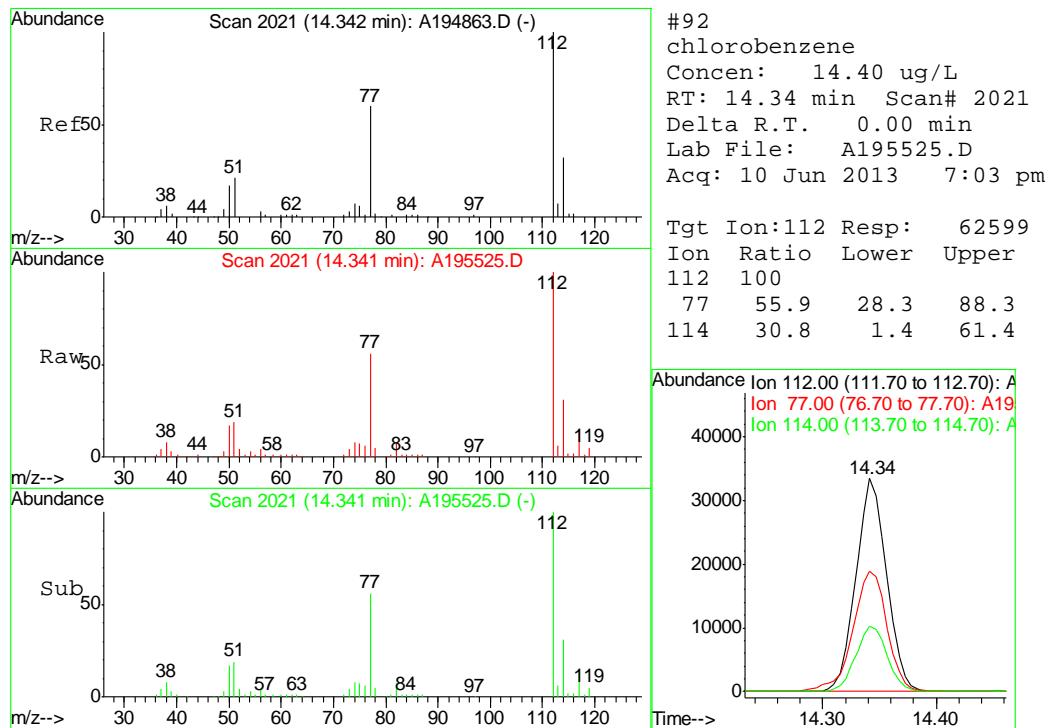
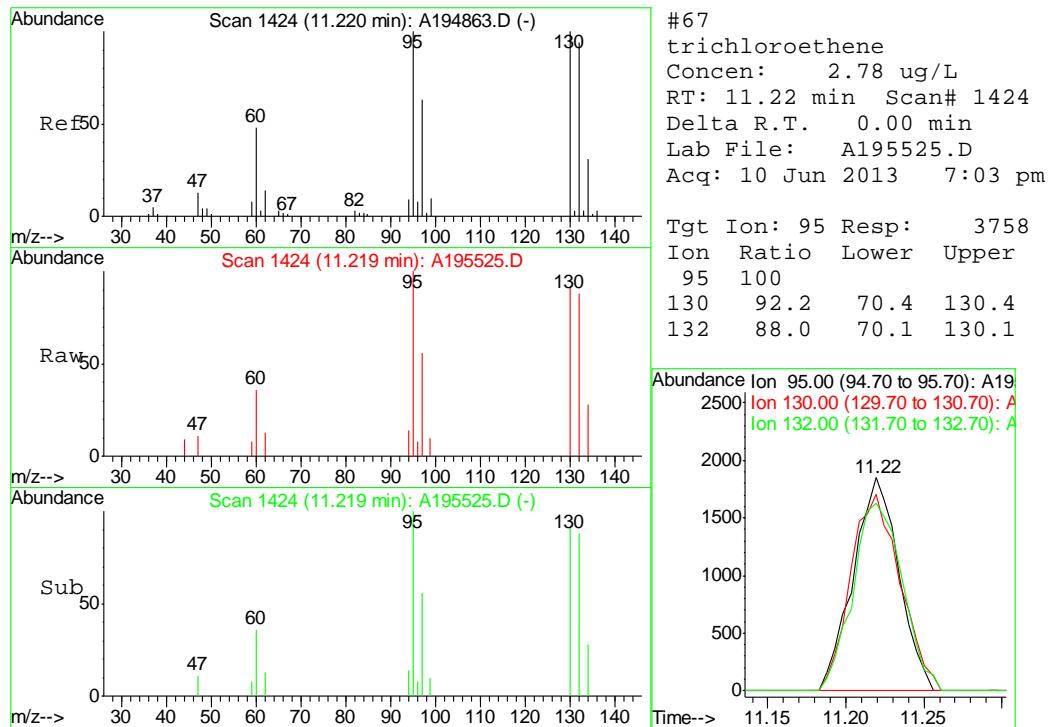
Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration









## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195482.D Vial: 100  
 Acq On : 8 Jun 2013 10:31 pm Operator: Oksanat  
 Sample : mb Inst : MSA  
 Misc : MS49559,VA7375,5,,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:39 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.56	65	79878	500.00	ug/L	0.00
5) pentafluorobenzene	9.90	168	197729	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.86	114	313409	50.00	ug/L	0.00
85) chlorobenzene-d5	14.30	117	291525	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	16.94	152	148595	50.00	ug/L	0.00

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.96	113	70517	54.40	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	108.80%
48) 1,2-dichloroethane-d4 (s)	10.41	65	71054	53.06	ug/L	0.00
Spiked Amount	50.000	Range	74 - 122	Recovery	=	106.12%
77) toluene-d8 (s)	12.61	98	309027	51.34	ug/L	0.00
Spiked Amount	50.000	Range	80 - 120	Recovery	=	102.68%
102) 4-bromofluorobenzene (s)	15.61	95	114031	50.75	ug/L	0.00
Spiked Amount	50.000	Range	76 - 116	Recovery	=	101.50%

Target Compounds	Qvalue
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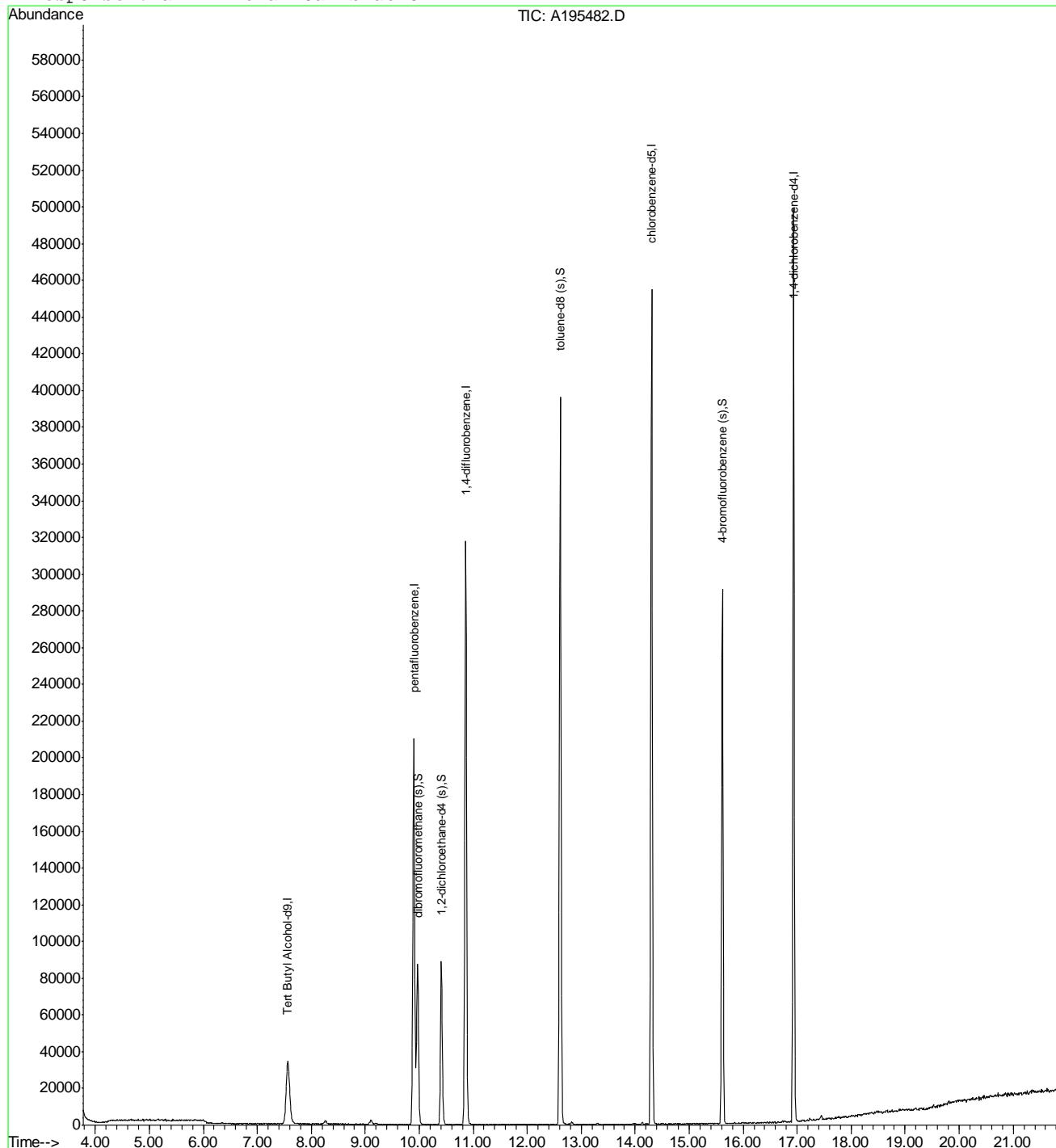
## Quantitation Report

Data File : C:\HPCHEM\1\DATA\A195482.D  
 Acq On : 8 Jun 2013 10:31 pm  
 Sample : mb  
 Misc : MS49559,VA7375,5,,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 10 10:39 2013

Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\A195515.D Vial: 100  
 Acq On : 10 Jun 2013 1:24 pm Operator: Oksanat  
 Sample : mb Inst : MSA  
 Misc : MS49475,VA7376,5,,,,1 Multiplr: 1.00  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 11 13:02 2013 Quant Results File: MA7347.RES

Quant Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration  
 DataAcq Meth : MA7347

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.55	65	58032	500.00	ug/L	-0.01
5) pentafluorobenzene	9.90	168	160403	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.86	114	253781	50.00	ug/L	0.00
85) chlorobenzene-d5	14.30	117	233989	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	16.93	152	120083	50.00	ug/L	0.00

## System Monitoring Compounds

47) dibromofluoromethane (s)	9.97	113	54610	51.93	ug/L	0.00
Spiked Amount	50.000	Range	80 - 119	Recovery	=	103.86%
48) 1,2-dichloroethane-d4 (s)	10.41	65	53512	49.26	ug/L	0.00
Spiked Amount	50.000	Range	74 - 122	Recovery	=	98.52%
77) toluene-d8 (s)	12.61	98	251162	51.53	ug/L	0.00
Spiked Amount	50.000	Range	80 - 120	Recovery	=	103.06%
102) 4-bromofluorobenzene (s)	15.61	95	92376	50.87	ug/L	0.00
Spiked Amount	50.000	Range	76 - 116	Recovery	=	101.74%

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration  
 A195515.D MA7347.M Tue Jun 11 13:26:37 2013 MSA

Page 1

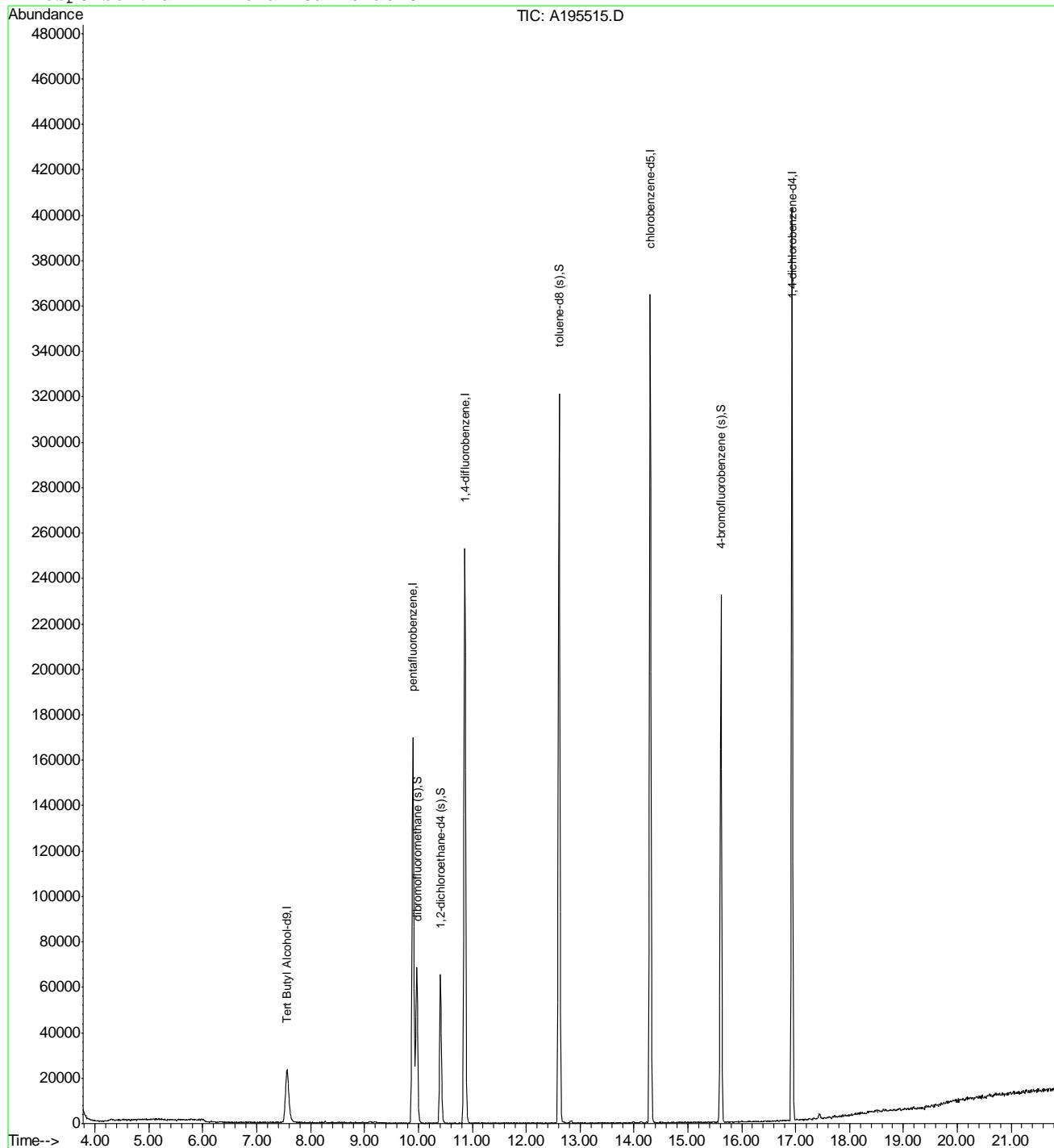
## Quantitation Report

Data File : C:\HPCHEM\1\DATA\A195515.D  
 Acq On : 10 Jun 2013 1:24 pm  
 Sample : mb  
 Misc : MS49475,VA7376,5,,,,1  
 MS Integration Params: LSCINT.P  
 Quant Time: Jun 11 13:02 2013

Vial: 100  
 Operator: Oksanat  
 Inst : MSA  
 Multiplr: 1.00

Quant Results File: MA7347.RES

Method : C:\HPCHEM\1\METHODS\MA7347.M (RTE Integrator)  
 Title : SW 846 8260bB ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 28 12:36:14 2013  
 Response via : Initial Calibration





## Misc. Forms

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### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



## CHAIN OF CUSTODY

PAGE \_\_\_\_ OF \_\_\_\_

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
[www.accutest.com](http://www.accutest.com)

Client / Reporting Information		Project Information									FED-EX Tracking #		Bottle Order Control #						
Company Name: Accutest Laboratories		Project Name: Marcus Hook Refinery									Accutest Quote #		Accutest Job # <b>JB38711</b>						
Street Address 2235 Route 130		Street		Billing Information ( if different from Report to)															
City Dayton	State NJ	Zip 08810	City	State	Company Name														
Project Contact Kristin Beebe	E-mail		Project #	Street Address															
Phone # 732-355-4559	Fax #		Client Purchase Order #		City		State	Zip											
Sampler(s) Name(s)	Phone		Project Manager		Attention:														
Accutest Sample #		Field ID / Point of Collection		Collection			Matrix	Number of preserved Bottles							%SOL		LAB USE ONLY		
				Date 6/4/2013	Time 10:30	Sampled by		# of bottles	ICP	NiOCH	HN03	H2SO4	None	D Water					VMECH
1			Soil	2				X					X	X	X	X			
2			Soil	2				X					X	X	X	X			
3			Soil	2				X					X	X	X	X			
4			Soil	2				X					X	X	X	X			
5			Soil	2				X					X	X	X	X			
																	10D		
Turnaround Time ( Business days)		Data Deliverable Information												Comments / Special Instructions					
<p>Approved By (Accutest PM): / Date: _____</p> <p> <input checked="" type="checkbox"/> Std. 10 Business Days  <input type="checkbox"/> 5 Day RUSH  <input type="checkbox"/> 3 Day EMERGENCY  <input type="checkbox"/> 2 Day EMERGENCY  <input type="checkbox"/> 1 Day EMERGENCY  <input type="checkbox"/> other _____  <b>Emergency &amp; Rush - If data available VIA Lablink</b> </p>														<p> <input type="checkbox"/> Commercial "A" (Level 1)  <input type="checkbox"/> Commercial "B" (Level 2)  <input type="checkbox"/> FULL/TI (Level 3+4)  <input checked="" type="checkbox"/> NJ Reduced  <input type="checkbox"/> Commercial "C"         </p> <p> <input type="checkbox"/> NYASP Category A  <input type="checkbox"/> NYASP Category B  <input type="checkbox"/> State Forms  <input type="checkbox"/> EDD Format  <input type="checkbox"/> Other _____         </p> <p>           Commercial "A" = Results Only            Commercial "B" = Results + QC Summary            NJ Reduced = Results + QC Summary + Partial Raw data         </p> <p>Please send 300ml jar and 60ml jar to ALNE only. Methanol kits to remain here for analysis.</p>					
<p>Sample Custody must be documented below each time samples change possession, including courier delivery.</p> <p> <b>1</b>            Relinquished by Sample: _____ Date Time: <b>6-5-13 1700</b> Received By: <b>FED EX</b> Relinquished By: _____            Date Time: <b>6-6-13 1300</b> Received By: <b>2</b> </p> <p> <b>3</b>            Relinquished by Sampler: _____ Date Time: _____ Received By: <b>3</b> Relinquished By: _____            Date Time: _____ Received By: <b>4</b> </p> <p> <b>5</b>            Relinquished by: _____ Date Time: _____ Received By: <b>5</b> Custody Seal # _____ Intact <input type="checkbox"/> Preserved where applicable <input type="checkbox"/>            On Ice <input type="checkbox"/> Cooler Temp. <b>3,2</b> </p>														Date/Time: <b>6-6-13</b> Received By: <b>2</b> Date/Time: <b>6-6-13</b> Received By: <b>4</b> Date/Time: _____ Received By: <b>5</b>					

**JB38711: Chain of Custody**

**Page 1 of 2**

**Accutest Labs of New England, Inc.**



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB38711

Client: ACNJ

Immediate Client Services Action Required: No

Date / Time Received: 6/6/2013

Delivery Method:

Client Service Action Required at Login: No

Project: SUB

No. Coolers: 1

Airbill #'s:

**Cooler Security****Y or N****Y or N**

1. Custody Seals Present:   3. COC Present:    
2. Custody Seals Intact:   4. Smpl Dates/Time OK

**Cooler Temperature****Y or N**

1. Temp criteria achieved:    
2. Cooler temp verification:  Infared gun  
3. Cooler media:  Ice (bag)

**Quality Control Preservation****Y or N****N/A**

1. Trip Blank present / cooler:     
2. Trip Blank listed on COC:     
3. Samples preserved properly:    
4. VOCs headspace free:

**Sample Integrity - Documentation****Y or N**

1. Sample labels present on bottles:    
2. Container labeling complete:    
3. Sample container label / COC agree:

**Sample Integrity - Condition****Y or N**

1. Sample recvd within HT:    
2. All containers accounted for:    
3. Condition of sample:  Intact

**Sample Integrity - Instructions****Y or N****N/A**

1. Analysis requested is clear:    
2. Bottles received for unspecified tests:    
3. Sufficient volume recvd for analysis:    
4. Compositing instructions clear:     
5. Filtering instructions clear:

Comments

Accutest Laboratories  
V:508.481.6200495 Technology Center West, Bldg One  
F: 508.481.7753Marlborough, MA  
www.accutest.com

8.1

8

**JB38711: Chain of Custody****Page 2 of 2**

## Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JB38711

AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA  
 Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB38711-1	Collected: 04-JUN-13 10:30 By: ED		Received: 04-JUN-13 By:			
	AOI5_MW-472_1-2_060413					
JB38711-1	SM21 2540 B MOD.	07-JUN-13	HS			%SOL
JB38711-1	SW846 8270C	11-JUN-13 02:53	KR	08-JUN-13 PA		B8270SL
JB38711-1	SW846 6010C	12-JUN-13 11:15	EAL	11-JUN-13 DA		PB
JB38711-1	SW846 8011	15-JUN-13 12:32	NK	14-JUN-13 BJ		V8011EDB
JB38711-2	Collected: 04-JUN-13 11:10 By: ED		Received: 04-JUN-13 By:			
	AOI5_MW-472_7-8_060413					
JB38711-2	SM21 2540 B MOD.	07-JUN-13	HS			%SOL
JB38711-2	SW846 8270C	11-JUN-13 03:18	KR	08-JUN-13 PA		B8270SL
JB38711-2	SW846 6010C	12-JUN-13 11:19	EAL	11-JUN-13 DA		PB
JB38711-2	SW846 8011	15-JUN-13 09:28	NK	14-JUN-13 BJ		V8011EDB
JB38711-3	Collected: 04-JUN-13 10:00 By: ED		Received: 04-JUN-13 By:			
	AOI5_MW-475_2-4'_060413					
JB38711-3	SM21 2540 B MOD.	07-JUN-13	HS			%SOL
JB38711-3	SW846 8270C	11-JUN-13 03:44	KR	08-JUN-13 PA		B8270SL
JB38711-3	SW846 6010C	12-JUN-13 11:23	EAL	11-JUN-13 DA		PB
JB38711-3	SW846 8011	15-JUN-13 09:51	NK	14-JUN-13 BJ		V8011EDB
JB38711-4	Collected: 04-JUN-13 14:30 By: ED		Received: 04-JUN-13 By:			
	AOI5_MW-471_0-2'_060413					
JB38711-4	SM21 2540 B MOD.	07-JUN-13	HS			%SOL
JB38711-4	SW846 8270C	11-JUN-13 04:09	KR	08-JUN-13 PA		B8270SL
JB38711-4	SW846 6010C	12-JUN-13 11:28	EAL	11-JUN-13 DA		PB
JB38711-4	SW846 8011	15-JUN-13 10:13	NK	14-JUN-13 BJ		V8011EDB
JB38711-5	Collected: 04-JUN-13 10:50 By: ED		Received: 04-JUN-13 By:			
	AOI5_MW-476_6-7					
JB38711-5	SM21 2540 B MOD.	07-JUN-13	HS			%SOL
JB38711-5	SW846 8270C	11-JUN-13 04:34	KR	08-JUN-13 PA		B8270SL
JB38711-5	SW846 6010C	12-JUN-13 11:32	EAL	11-JUN-13 DA		PB
JB38711-5	SW846 8011	15-JUN-13 10:36	NK	14-JUN-13 BJ		V8011EDB

## Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JB38711  
Account: ALNJ Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 06/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38711-1.1	Walk In Ref #9	Thomas Abruzzise	06/08/13 14:38	Retrieve from Storage
JB38711-1.1	Thomas Abruzzise	Walk In Ref #9	06/08/13 21:30	Return to Storage
JB38711-1.1	Walk In Ref #9	Dorina Antonovici	06/11/13 11:53	Retrieve from Storage
JB38711-1.1	Dorina Antonovici	Walk In Ref #9	06/11/13 17:37	Return to Storage
JB38711-1.1	Walk In Ref #9	Bijan Jafari	06/14/13 08:08	Retrieve from Storage
JB38711-1.1	Bijan Jafari	Walk In Ref #9	06/14/13 16:23	Return to Storage
JB38711-2.1	Walk In Ref #9	Thomas Abruzzise	06/08/13 14:38	Retrieve from Storage
JB38711-2.1	Thomas Abruzzise	Walk In Ref #9	06/08/13 21:30	Return to Storage
JB38711-2.1	Walk In Ref #9	Dorina Antonovici	06/11/13 11:53	Retrieve from Storage
JB38711-2.1	Dorina Antonovici	Walk In Ref #9	06/11/13 17:37	Return to Storage
JB38711-2.1	Walk In Ref #9	Bijan Jafari	06/14/13 08:08	Retrieve from Storage
JB38711-2.1	Bijan Jafari	Walk In Ref #9	06/14/13 16:23	Return to Storage
JB38711-3.1	Walk In Ref #9	Thomas Abruzzise	06/08/13 14:38	Retrieve from Storage
JB38711-3.1	Thomas Abruzzise	Walk In Ref #9	06/08/13 21:30	Return to Storage
JB38711-3.1	Walk In Ref #9	Dorina Antonovici	06/11/13 11:53	Retrieve from Storage
JB38711-3.1	Dorina Antonovici	Walk In Ref #9	06/11/13 17:37	Return to Storage
JB38711-3.1	Walk In Ref #9	Bijan Jafari	06/14/13 08:08	Retrieve from Storage
JB38711-3.1	Bijan Jafari	Walk In Ref #9	06/14/13 16:23	Return to Storage
JB38711-4.1	Walk In Ref #9	Thomas Abruzzise	06/08/13 14:38	Retrieve from Storage
JB38711-4.1	Thomas Abruzzise	Walk In Ref #9	06/08/13 21:30	Return to Storage
JB38711-4.1	Walk In Ref #9	Dorina Antonovici	06/11/13 11:53	Retrieve from Storage
JB38711-4.1	Dorina Antonovici	Walk In Ref #9	06/11/13 17:37	Return to Storage
JB38711-4.1	Walk In Ref #9	Bijan Jafari	06/14/13 08:08	Retrieve from Storage
JB38711-4.1	Bijan Jafari	Walk In Ref #9	06/14/13 16:23	Return to Storage
JB38711-5.1	Walk In Ref #9	Thomas Abruzzise	06/08/13 14:38	Retrieve from Storage
JB38711-5.1	Thomas Abruzzise	Walk In Ref #9	06/08/13 21:30	Return to Storage
JB38711-5.1	Walk In Ref #9	Dorina Antonovici	06/11/13 11:53	Retrieve from Storage
JB38711-5.1	Dorina Antonovici	Walk In Ref #9	06/11/13 17:37	Return to Storage
JB38711-5.1	Walk In Ref #9	Bijan Jafari	06/14/13 08:08	Retrieve from Storage
JB38711-5.1	Bijan Jafari	Walk In Ref #9	06/14/13 16:23	Return to Storage



## GC/MS Semi-volatiles

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33547-MB	W12951.D	1	06/10/13	KR	06/08/13	OP33547	MSW596

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	98	33	ug/kg	
56-55-3	Benzo(a)anthracene	ND	98	38	ug/kg	
50-32-8	Benzo(a)pyrene	ND	98	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	98	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	98	44	ug/kg	
218-01-9	Chrysene	ND	98	40	ug/kg	
86-73-7	Fluorene	ND	98	34	ug/kg	
91-20-3	Naphthalene	ND	98	38	ug/kg	
85-01-8	Phenanthrene	ND	98	29	ug/kg	
129-00-0	Pyrene	ND	98	30	ug/kg	

**CAS No. Surrogate Recoveries Limits**

367-12-4	2-Fluorophenol	73%	30-130%
4165-62-2	Phenol-d5	70%	30-130%
118-79-6	2,4,6-Tribromophenol	77%	30-130%
4165-60-0	Nitrobenzene-d5	70%	30-130%
321-60-8	2-Fluorobiphenyl	78%	30-130%
1718-51-0	Terphenyl-d14	85%	30-130%

**CAS No. Tentatively Identified Compounds R.T. Est. Conc. Units Q**

Total TIC, Semi-Volatile 0 ug/kg

## Blank Spike Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33547-BS	W12952.D	1	06/10/13	KR	06/08/13	OP33547	MSW596

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	2400	1860	77	40-140
56-55-3	Benzo(a)anthracene	2400	2090	87	40-140
50-32-8	Benzo(a)pyrene	2400	1770	74	40-140
205-99-2	Benzo(b)fluoranthene	2400	1930	80	40-140
191-24-2	Benzo(g,h,i)perylene	2400	2060	86	40-140
218-01-9	Chrysene	2400	1990	83	40-140
86-73-7	Fluorene	2400	1880	78	40-140
91-20-3	Naphthalene	2400	1690	70	40-140
85-01-8	Phenanthrene	2400	1950	81	40-140
129-00-0	Pyrene	2400	1980	82	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	70%	30-130%
4165-62-2	Phenol-d5	70%	30-130%
118-79-6	2,4,6-Tribromophenol	88%	30-130%
4165-60-0	Nitrobenzene-d5	68%	30-130%
321-60-8	2-Fluorobiphenyl	80%	30-130%
1718-51-0	Terphenyl-d14	89%	30-130%

\* = Outside of Control Limits.

9.2.1  
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# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33547-MS	W12953.D	1	06/10/13	KR	06/08/13	OP33547	MSW596
OP33547-MSD	W12954.D	1	06/10/13	KR	06/08/13	OP33547	MSW596
MC21507-2	W12955.D	1	06/10/13	KR	06/08/13	OP33547	MSW596

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	MC21507-2		Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
		ug/kg	Q							
120-12-7	Anthracene	ND	2910	2210	76	2370	83	7	40-140/30	
56-55-3	Benzo(a)anthracene	ND	2910	2460	85	2630	92	7	40-140/30	
50-32-8	Benzo(a)pyrene	ND	2910	2090	72	2250	79	7	40-140/30	
205-99-2	Benzo(b)fluoranthene	ND	2910	2280	78	2400	84	5	40-140/30	
191-24-2	Benzo(g,h,i)perylene	ND	2910	2400	83	2600	91	8	40-140/30	
218-01-9	Chrysene	ND	2910	2370	82	2540	89	7	40-140/30	
86-73-7	Fluorene	ND	2910	2180	75	2350	82	8	40-140/30	
91-20-3	Naphthalene	ND	2910	1700	58	1790	62	5	40-140/30	
85-01-8	Phenanthrene	ND	2910	2330	80	2490	87	7	40-140/30	
129-00-0	Pyrene	ND	2910	2350	81	2500	87	6	40-140/30	

CAS No.	Surrogate Recoveries	MS	MSD	MC21507-2	Limits
367-12-4	2-Fluorophenol	53%	56%		30-130%
4165-62-2	Phenol-d5	58%	58%		30-130%
118-79-6	2,4,6-Tribromophenol	81%	85%		30-130%
4165-60-0	Nitrobenzene-d5	54%	56%	62%	30-130%
321-60-8	2-Fluorobiphenyl	70%	71%	71%	30-130%
1718-51-0	Terphenyl-d14	83%	89%	76%	30-130%

\* = Outside of Control Limits.

9.3.1  
9

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW580-DFTPP	Injection Date:	05/30/13
Lab File ID:	W12578.D	Injection Time:	07:20
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	17592	44.7	Pass
68	Less than 2.0% of mass 69	327	0.83	(1.75) <sup>a</sup> Pass
69	Mass 69 relative abundance	18712	47.6	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	21376	54.4	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	39328	100.0	Pass
199	5.0 - 9.0% of mass 198	2823	7.18	Pass
275	10.0 - 30.0% of mass 198	10085	25.6	Pass
365	1.0 - 100.0% of mass 198	1062	2.70	Pass
441	Present, but less than mass 443	2939	7.47	(71.7) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	19792	50.3	Pass
443	17.0 - 23.0% of mass 442	4099	10.4	(20.7) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW579-IC579	W12580.D	05/30/13	09:02	01:42	Initial cal 2
MSW579-IC579	W12581.D	05/30/13	09:25	02:05	Initial cal 5
MSW579-IC579	W12582.D	05/30/13	10:16	02:56	Initial cal 10
MSW579-IC579	W12583.D	05/30/13	10:40	03:20	Initial cal 20
MSW579-ICC579	W12584.D	05/30/13	11:03	03:43	Initial cal 50
MSW579-IC579	W12585.D	05/30/13	11:26	04:06	Initial cal 80
MSW579-IC579	W12586.D	05/30/13	11:49	04:29	Initial cal 120
MSW579-IC579	W12587.D	05/30/13	12:12	04:52	Initial cal 160
MSW579-ICV579	W12588.D	05/30/13	12:36	05:16	Initial cal verification 50
MSW579-ICV579	W12589.D	05/30/13	12:59	05:39	Initial cal verification 20
MSW579-ICV579	W12590.D	05/30/13	13:22	06:02	Initial cal verification 20
MSW580-ICC580	W12593.D	05/30/13	15:22	08:02	Initial cal 50
MSW580-IC580	W12594.D	05/30/13	15:45	08:25	Initial cal 5
MSW580-IC580	W12595.D	05/30/13	16:08	08:48	Initial cal 10
MSW580-IC580	W12596.D	05/30/13	16:31	09:11	Initial cal 20
MSW580-IC580	W12597.D	05/30/13	16:54	09:34	Initial cal 40
MSW580-IC580	W12598.D	05/30/13	17:18	09:58	Initial cal 80
MSW580-IC580	W12599.D	05/30/13	17:41	10:21	Initial cal 100

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW596-DFTPP	Injection Date:	06/10/13
Lab File ID:	W12942.D	Injection Time:	07:59
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	5393	30.3	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	6203	34.9	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	7753	43.6	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	17792	100.0	Pass
199	5.0 - 9.0% of mass 198	1084	6.09	Pass
275	10.0 - 30.0% of mass 198	4589	25.8	Pass
365	1.0 - 100.0% of mass 198	375	2.11	Pass
441	Present, but less than mass 443	1713	9.63	(72.2) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	12156	68.3	Pass
443	17.0 - 23.0% of mass 442	2373	13.3	(19.5) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW596-CC580	W12944.D	06/10/13	09:10	01:11	Continuing cal 40
ZZZZZZ	W12945.D	06/10/13	09:33	01:34	(unrelated sample)
ZZZZZZ	W12946.D	06/10/13	09:57	01:58	(unrelated sample)
ZZZZZZ	W12947.D	06/10/13	10:21	02:22	(unrelated sample)
ZZZZZZ	W12948.D	06/10/13	10:44	02:45	(unrelated sample)
ZZZZZZ	W12949.D	06/10/13	11:08	03:09	(unrelated sample)
ZZZZZZ	W12950.D	06/10/13	11:31	03:32	(unrelated sample)
OP33547-MB	W12951.D	06/10/13	11:55	03:56	Method Blank
OP33547-BS	W12952.D	06/10/13	12:18	04:19	Blank Spike
OP33547-MS	W12953.D	06/10/13	12:42	04:43	Matrix Spike
OP33547-MSD	W12954.D	06/10/13	13:05	05:06	Matrix Spike Duplicate
MC21507-2	W12955.D	06/10/13	13:29	05:30	(used for QC only; not part of job JB38711)
ZZZZZZ	W12956.D	06/10/13	13:52	05:53	(unrelated sample)
ZZZZZZ	W12957.D	06/10/13	14:15	06:16	(unrelated sample)
ZZZZZZ	W12958.D	06/10/13	14:39	06:40	(unrelated sample)
ZZZZZZ	W12959.D	06/10/13	15:02	07:03	(unrelated sample)
ZZZZZZ	W12960.D	06/10/13	15:25	07:26	(unrelated sample)
ZZZZZZ	W12961.D	06/10/13	15:49	07:50	(unrelated sample)

# Instrument Performance Check (DFTPP)

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Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW597-DFTPP	Injection Date:	06/10/13
Lab File ID:	W12962.D	Injection Time:	16:38
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	4375	33.2	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	4741	36.0	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	6050	45.9	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	13172	100.0	Pass
199	5.0 - 9.0% of mass 198	900	6.83	Pass
275	10.0 - 30.0% of mass 198	3311	25.1	Pass
365	1.0 - 100.0% of mass 198	318	2.41	Pass
441	Present, but less than mass 443	1272	9.66	(69.3) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	8115	61.6	Pass
443	17.0 - 23.0% of mass 442	1836	13.9	(22.6) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW597-CC579	W12963.D	06/10/13	17:01	00:23	Continuing cal 50
MSW597-CC579	W12964.D	06/10/13	17:24	00:46	Continuing cal 50
OP33484-MB	W12965.D	06/10/13	17:48	01:10	Method Blank
OP33484-BS	W12966.D	06/10/13	18:12	01:34	Blank Spike
OP33484-BSD	W12967.D	06/10/13	18:37	01:59	Blank Spike Duplicate
OP33484-MS	W12968.D	06/10/13	19:01	02:23	Matrix Spike
OP33484-MSD	W12969.D	06/10/13	19:26	02:48	Matrix Spike Duplicate
MC21231-3	W12970.D	06/10/13	19:50	03:12	(used for QC only; not part of job JB38711)
ZZZZZZ	W12971.D	06/10/13	20:15	03:37	(unrelated sample)
ZZZZZZ	W12972.D	06/10/13	20:39	04:01	(unrelated sample)
ZZZZZZ	W12973.D	06/10/13	21:03	04:25	(unrelated sample)
ZZZZZZ	W12974.D	06/10/13	21:28	04:50	(unrelated sample)
ZZZZZZ	W12975.D	06/10/13	21:53	05:15	(unrelated sample)
ZZZZZZ	W12976.D	06/10/13	22:18	05:40	(unrelated sample)
ZZZZZZ	W12977.D	06/10/13	22:43	06:05	(unrelated sample)
ZZZZZZ	W12978.D	06/10/13	23:08	06:30	(unrelated sample)
ZZZZZZ	W12979.D	06/10/13	23:33	06:55	(unrelated sample)
ZZZZZZ	W12980.D	06/10/13	23:58	07:20	(unrelated sample)
ZZZZZZ	W12981.D	06/11/13	00:22	07:44	(unrelated sample)

# Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW597-DFTPP	Injection Date:	06/10/13
Lab File ID:	W12962.D	Injection Time:	16:38
Instrument ID:	GCMSW		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	W12982.D	06/11/13	00:47	08:09	(unrelated sample)
ZZZZZZ	W12983.D	06/11/13	01:13	08:35	(unrelated sample)
ZZZZZZ	W12984.D	06/11/13	01:38	09:00	(unrelated sample)
ZZZZZZ	W12985.D	06/11/13	02:03	09:25	(unrelated sample)
ZZZZZZ	W12986.D	06/11/13	02:28	09:50	(unrelated sample)
JB38711-1	W12987.D	06/11/13	02:53	10:15	AOI5_MW-472_1-2_060413
JB38711-2	W12988.D	06/11/13	03:18	10:40	AOI5_MW-472_7-8_060413
JB38711-3	W12989.D	06/11/13	03:44	11:06	AOI5_MW-475_2-4'_060413
JB38711-4	W12990.D	06/11/13	04:09	11:31	AOI5_MW-471_0-2'_060413
JB38711-5	W12991.D	06/11/13	04:34	11:56	AOI5_MW-476_6-7
ZZZZZZ	W12992.D	06/11/13	04:59	12:21	(unrelated sample)

# Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW596-CC580	Injection Date:	06/10/13
Lab File ID:	W12944.D	Injection Time:	09:10
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT								
Check Std	60556	4.18	217205	5.24	145834	6.77	274502	8.18	359934	11.15	368061	12.74
Upper Limit <sup>a</sup>	121112	4.68	434410	5.74	291668	7.27	549004	8.68	719868	11.65	736122	13.24
Lower Limit <sup>b</sup>	30278	3.68	108603	4.74	72917	6.27	137251	7.68	179967	10.65	184031	12.24

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	50076	4.18	181341	5.24	122366	6.77	231047	8.18	302251	11.15	316494	12.74
ZZZZZZ	58412	4.18	207516	5.24	138323	6.77	261221	8.18	340000	11.15	359229	12.74
ZZZZZZ	55351	4.18	197090	5.24	131719	6.77	244417	8.18	317986	11.15	333017	12.74
ZZZZZZ	53071	4.18	187612	5.24	126161	6.77	234764	8.18	304086	11.15	315123	12.74
ZZZZZZ	49902	4.18	176436	5.24	118831	6.77	220563	8.18	289615	11.15	300585	12.74
ZZZZZZ	48971	4.18	173407	5.24	114960	6.77	215791	8.17	280694	11.15	288679	12.74
OP33547-MB	52501	4.18	188319	5.24	124544	6.77	232179	8.17	296773	11.15	303069	12.74
OP33547-BS	47708	4.18	165022	5.24	111762	6.77	211824	8.18	271632	11.15	279384	12.74
OP33547-MS	47801	4.18	168978	5.24	112600	6.77	209810	8.18	273341	11.15	277367	12.74
OP33547-MSD	51180	4.18	179633	5.24	119649	6.77	225757	8.18	289934	11.15	295235	12.74
MC21507-2	54842	4.18	194452	5.24	130110	6.77	240240	8.17	308462	11.15	308253	12.74
ZZZZZZ	55976	4.18	198213	5.24	131673	6.77	244573	8.18	311265	11.15	314613	12.74
ZZZZZZ	49599	4.18	172496	5.24	113991	6.77	211730	8.17	269703	11.15	271576	12.74
ZZZZZZ	57762	4.18	205035	5.24	135745	6.77	253217	8.18	316333	11.15	318320	12.74
ZZZZZZ	54498	4.18	192629	5.24	129398	6.77	241034	8.18	303192	11.15	306019	12.74
ZZZZZZ	59870	4.18	210087	5.24	140164	6.77	257047	8.17	322585	11.15	308418	12.74
ZZZZZZ	55959	4.18	196364	5.24	131897	6.77	245605	8.18	303285	11.15	298262	12.74

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Internal Standard Area Summary

Page 1 of 2

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW597-CC579				Injection Date:	06/10/13					
Lab File ID:	W12963.D				Injection Time:	17:01					
Instrument ID:	GCMSW				Method:	SW846 8270C					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	59199	4.18	213002	5.24	145187	6.78	277602	8.18	352928	11.16	356681	12.74
Upper Limit <sup>a</sup>	118398	4.68	426004	5.74	290374	7.28	555204	8.68	705856	11.66	713362	13.24
Lower Limit <sup>b</sup>	29600	3.68	106501	4.74	72594	6.28	138801	7.68	176464	10.66	178341	12.24

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP33484-MB	59011	4.18	211721	5.24	140196	6.77	264765	8.18	331942	11.15	329972	12.74
OP33484-BS	62827	4.18	217484	5.24	147348	6.77	277001	8.18	348088	11.15	339359	12.74
OP33484-BSD	58504	4.18	204701	5.24	136719	6.77	257460	8.18	321299	11.15	320382	12.74
OP33484-MS	64678	4.18	223233	5.24	150425	6.77	282647	8.18	354874	11.15	356643	12.74
OP33484-MSD	62479	4.18	217523	5.24	145990	6.77	273250	8.18	344469	11.15	334584	12.74
MC21231-3	60776	4.18	213400	5.24	140961	6.77	260138	8.18	329322	11.15	326322	12.74
ZZZZZZ	62687	4.18	223314	5.24	146410	6.77	275458	8.18	348772	11.15	354199	12.74
ZZZZZZ	70218	4.18	236563	5.24	154291	6.77	275778	8.18	341246	11.15	343898	12.74
ZZZZZZ	59787	4.18	210798	5.24	140153	6.77	263526	8.18	335190	11.15	340238	12.74
ZZZZZZ	48475	4.18	167849	5.24	111470	6.77	204288	8.18	260147	11.18	278267	12.77
ZZZZZZ	53820	4.18	194792	5.24	128057	6.77	237832	8.18	304419	11.15	311948	12.74
ZZZZZZ	52903	4.18	189886	5.24	127313	6.77	232891	8.18	294991	11.15	302408	12.74
ZZZZZZ	47510	4.18	171086	5.24	113167	6.78	210482	8.18	271445	11.18	282249	12.76
ZZZZZZ	44514	4.18	158836	5.24	104952	6.78	195112	8.18	250659	11.17	268206	12.76
ZZZZZZ	53024	4.18	185950	5.24	122006	6.78	224788	8.19	238229	11.24	302351	12.80
ZZZZZZ	47536	4.18	166098	5.24	110557	6.78	205498	8.18	258435	11.15	271043	12.74
ZZZZZZ	53676	4.18	190107	5.24	123826	6.78	225062	8.18	274831	11.15	291755	12.75
ZZZZZZ	51152	4.18	182039	5.24	120165	6.78	221828	8.18	285500	11.16	295468	12.75
ZZZZZZ	51099	4.18	179225	5.24	120466	6.78	220990	8.18	270534	11.15	278493	12.75
ZZZZZZ	47324	4.18	168831	5.24	112409	6.78	208560	8.18	264870	11.15	275257	12.75
ZZZZZZ	50864	4.18	182276	5.24	121570	6.78	226053	8.18	287450	11.15	297388	12.75
ZZZZZZ	49077	4.18	173170	5.24	115834	6.78	214260	8.18	265047	11.15	270204	12.74
JB38711-1	47472	4.18	169460	5.24	113562	6.78	210287	8.18	266559	11.15	277775	12.75
JB38711-2	48445	4.18	173315	5.24	114706	6.78	210680	8.18	256389	11.15	264870	12.75
JB38711-3	50826	4.18	180875	5.24	120509	6.78	220010	8.18	271340	11.15	282421	12.75
JB38711-4	55411	4.18	198619	5.24	132840	6.78	235698	8.18	287795	11.16	298827	12.75
JB38711-5	51806	4.18	184119	5.24	122760	6.78	225219	8.18	278832	11.15	287753	12.75
ZZZZZZ	58206	4.18	195991	5.24	130170	6.78	240697	8.18	304935	11.16	311990	12.75

- IS 1 = 1,4-Dichlorobenzene-d4  
 IS 2 = Naphthalene-d8  
 IS 3 = Acenaphthene-D10  
 IS 4 = Phenanthrene-d10  
 IS 5 = Chrysene-d12  
 IS 6 = Perylene-d12

## Semivolatile Internal Standard Area Summary

Page 2 of 2

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW597-CC579	Injection Date:	06/10/13
Lab File ID:	W12963.D	Injection Time:	17:01
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab Sample ID	IS 1 AREA	IS 2 RT	IS 3 AREA	IS 4 RT	IS 5 AREA	IS 6 RT
------------------	--------------	------------	--------------	------------	--------------	------------

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8270C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB38711-1	W12987.D	54.0	64.0	72.0
JB38711-2	W12988.D	65.0	71.0	78.0
JB38711-3	W12989.D	70.0	77.0	85.0
JB38711-4	W12990.D	63.0	69.0	82.0
JB38711-5	W12991.D	59.0	65.0	72.0
OP33547-BS	W12952.D	68.0	80.0	89.0
OP33547-MB	W12951.D	70.0	78.0	85.0
OP33547-MS	W12953.D	54.0	70.0	83.0
OP33547-MSD	W12954.D	56.0	71.0	89.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

9.6.1  
9

# Initial Calibration Summary

Page 1 of 3

Job Number: JB38711

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSW

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
Title : SW-864 Method 8270  
Last Update : Thu May 30 18:03:11 2013  
Response via : Initial Calibration

### Calibration Files

160 =w12587.D	120 =w12586.D	80 =w12585.D	20 =w12583.D
5 =w12581.D	2 =w12580.D	10 =w12582.D	50 =w12584.D

Compound	160	120	80	20	5	2	10	50	Avg	%RSD
----------	-----	-----	----	----	---	---	----	----	-----	------

1) I 1,4-Dichlorobenzene-d	-----	ISTD-----								
2) N-nitrosodim	0.622	0.609	0.636	0.633	0.609		0.653	0.637	0.628	2.59
3) Pyridine	1.104	1.099	1.162	1.188	1.297		1.209	1.191	1.179	5.74
4) Aniline		0.504	0.541	0.589	0.572	0.544	0.588	0.574	0.559	5.52
5) 2-Fluorophen	1.096	1.081	1.070	1.092	1.036	1.084	1.121	1.086	1.083	2.23
6) bis(2-Chloro	0.652	0.651	0.671	0.682	0.686	0.660	0.714	0.684	0.675	3.12
7) Phenol-d5	1.355	1.336	1.312	1.354	1.233	1.250	1.371	1.349	1.320	3.90
8) Phenol	1.516	1.391	1.437	1.423	1.334	1.302	1.421	1.440	1.408	4.71
9) 2-Chlorophen	1.292	1.264	1.297	1.297	1.249	1.295	1.313	1.304	1.289	1.67
10) 1,3-Dichloro	1.452	1.434	1.467	1.488	1.495	1.488	1.547	1.501	1.484	2.31
11) 1,4-Dichloro	1.527	1.517	1.561	1.564	1.573	1.587	1.659	1.559	1.568	2.77
12) 1,2-Dichloro	1.404	1.393	1.438	1.451	1.434	1.407	1.488	1.437	1.431	2.13
13) Benzyl alcoh	0.814	0.801	0.813	0.788	0.739		0.803	0.824	0.798	3.51
14) bis(2-chloro	0.857	0.850	0.878	0.908	0.902	0.845	0.959	0.899	0.887	4.28
15) o-cresol	1.086	1.062	1.106	1.118	1.059	1.041	1.133	1.125	1.091	3.14
16) Acetophenone	1.670	1.679	1.665	1.765	1.688	1.694	1.824	1.759	1.718	3.35
17) Hexachloroet	0.486	0.476	0.493	0.494	0.493	0.478	0.516	0.504	0.493	2.62
18) N-Nitroso-di	0.735	0.719	0.743	0.723	0.621		0.751	0.757	0.721	6.43
19) m+p-cresols	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
20) 4-methylphen	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
21) I 1,4-Dichlorobenzene-d	-----	ISTD-----								
22) Benzaldehyde								0.000#	-1.00	

23) I Naphthalene-d8	-----	ISTD-----								
24) Nitrobenzene	0.309	0.301	0.298	0.307	0.269	0.256	0.315	0.309	0.295	7.23
25) Nitrobenzene	0.304	0.298	0.309	0.316	0.292	0.271	0.326	0.319	0.304	5.68
26) Isophorone	0.550	0.538	0.559	0.575	0.565	0.562	0.591	0.580	0.565	3.02
27) 2-Nitropheno	0.205	0.198	0.204	0.198	0.170		0.197	0.204	0.196	6.26
28) 2,4-Dimethyl	0.329	0.317	0.330	0.341	0.330		0.339	0.341	0.332	2.62
29) bis(2-Chloro	0.348	0.342	0.350	0.358	0.364		0.373	0.359	0.356	2.93
30) Benzoic acid	0.276	0.259	0.266	0.213			0.174	0.259	0.241	16.39

---- Linear regression --- Coefficient = 0.9990

Response Ratio = -0.02657 + 0.27590 \*A

31) 2,4-Dichloro	0.346	0.340	0.347	0.348	0.338		0.344	0.356	0.345	1.77
32) 1,2,4-Trichl	0.373	0.365	0.379	0.383	0.388	0.391	0.399	0.388	0.383	2.75
33) Naphthalene	0.983	0.981	1.015	1.042	1.049	1.059	1.093	1.041	1.033	3.69
34) 2,6-Dichloro	0.336	0.330	0.342	0.348	0.336		0.353	0.352	0.342	2.62
35) 4-Chloroanil	0.434	0.426	0.441	0.448	0.422		0.446	0.457	0.439	2.84
36) Hexachlorobu	0.238	0.235	0.246	0.251	0.257	0.256	0.260	0.253	0.249	3.62
37) 4-Chloro-3-m	0.298	0.288	0.296	0.300	0.279		0.302	0.306	0.295	3.13
38) 2-Methylnaph	0.746	0.727	0.758	0.787	0.768	0.761	0.814	0.785	0.768	3.51
39) 1-Methylnaph	0.703	0.704	0.715	0.755	0.740	0.747	0.779	0.751	0.737	3.69
40) 1,2,4,5-Tetr	0.454	0.453	0.459	0.489	0.472	0.492	0.502	0.483	0.475	3.99

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41) I	Naphthalene-d8a	-----ISTD-----						
42)	Caprolactam							
43) I	Acenaphthene-d10	-----ISTD-----						
44)	Pentachloron	0.186	0.182	0.183	0.183	0.180	0.196	0.185
45)	Hexachlorocyclo	0.420	0.409	0.447	0.398	0.361	0.406	0.438
46)	2,4,6-Trichloro	0.435	0.426	0.437	0.434	0.430	0.441	0.452
47)	2,4,5-Trichloro	0.464	0.446	0.470	0.463	0.447	0.473	0.485
48)	2-Fluorobiphenyl	1.311	1.307	1.330	1.386	1.373	1.407	1.471
49)	2-Chloronaphthalene	1.059	1.047	1.088	1.097	1.121	1.100	1.140
50)	Acenaphthylene	1.699	1.679	1.790	1.821	1.828	1.784	1.879
51)	Dimethylphthalate	1.304	1.277	1.339	1.362	1.360	1.335	1.411
52)	2,4-Dinitrotoluene	0.403	0.390	0.403	0.380		0.376	0.415
53)	Acenaphthene	1.061	1.051	1.097	1.121	1.146	1.116	1.164
54)	2,4-Dinitrophenol	0.247	0.234	0.240	0.195		0.233	0.230
55)	Dibenzofuran	1.636	1.613	1.696	1.744	1.756	1.745	1.788
56)	2,6-Dinitrotoluene	0.305	0.300	0.312	0.286		0.277	0.317
57)	4-Nitrophenol	0.183	0.180	0.184	0.183		0.173	0.194
58)	2,3,4,6-Tetralin	0.457	0.444	0.463	0.461	0.452	0.476	0.486
59)	Fluorene	1.274	1.261	1.334	1.374	1.401	1.379	1.429
60)	4-Chlorophenol	0.711	0.708	0.763	0.783	0.792	0.764	0.802
61)	Diethylphthalate	1.177	1.155	1.212	1.226	1.248	1.209	1.272
62)	2-nitroaniline	0.353	0.339	0.346	0.307		0.295	0.347
63)	3-nitroaniline	0.302	0.292	0.298	0.287		0.278	0.309
64)	4-nitroaniline	0.305	0.294	0.299	0.286		0.271	0.313
65)	Acenaphthene-d10a	-----ISTD-----						
66)	1,1'-Biphenyl							
67) I	Phenanthrene-d10	-----ISTD-----						
68)	4,6-Dinitrophenol	0.169	0.162	0.167	0.147		0.144	0.164
69)	n-Nitrosodiphenylamine	0.497	0.491	0.519	0.525	0.520	0.566	0.546
70)	1,2-Diphenylbenzene	0.521	0.442	0.467	0.474	0.488	0.483	0.496
71)	2,4,6-Tribromophenol	0.166	0.165	0.163	0.159	0.146	0.166	0.164
72)	4-Bromophenol	0.270	0.265	0.278	0.273	0.278	0.260	0.292
73)	Hexachlorobenzene	0.291	0.288	0.305	0.302	0.302	0.300	0.317
74)	Pentachlorobenzene	0.225	0.218	0.222	0.208		0.211	0.224
75)	Phenanthrene	1.017	1.009	1.061	1.094	1.107	1.124	1.153
76)	Anthracene	1.046	1.057	1.105	1.159	1.162	1.136	1.209
77)	Carbazole	0.928	0.922	0.948	0.989	0.989	0.947	1.024
78)	Di-n-butylphthalate	1.062	1.056	1.107	1.086	1.074	1.147	1.135
79)	Fluoranthene	1.184	1.192	1.243	1.296	1.292	1.262	1.362
80) I	Phenanthrene-d10a	-----ISTD-----						
81)	Atrazine							
82) I	Chrysene-d12	-----ISTD-----						
83)	Benzidine	0.259	0.250	0.285	0.268		0.241	0.284
84)	Pyrene	1.027	1.004	1.068	1.087	1.068	1.007	1.125
85)	Terphenyl-d1	0.895	0.874	0.909	0.953	0.917	0.876	0.994
86)	3,3'-Dimethylbenzidine	0.402	0.386	0.438	0.414	0.270	0.404	0.444
87)	Butylbenzylphthalate	0.352	0.333	0.348	0.302	0.262	0.300	0.338
88)	3,3'-Dichlorobiphenyl	0.429	0.422	0.441	0.399	0.317	0.391	0.446
89)	Benzo[a]anthracene	0.996	0.992	1.044	1.081	1.084	1.047	1.119
90)	Chrysene	0.985	0.960	1.016	1.050	1.066	1.045	1.082
91)	bis(2-Ethylhexyl)phthalate	0.537	0.516	0.540	0.460	0.385	0.459	0.522
92) I	Perylene-d12	-----ISTD-----						
93)	Di-n-octylphthalate	0.810	0.837	0.840	0.738	0.546	0.682	0.815
94)	Benzo[b]fluoranthene	1.343	1.313	1.306	1.177	1.064	0.992	1.211

## Initial Calibration Summary

Page 3 of 3

Job Number: JB38711

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

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95)	Benzo[k]fluo	1.079	1.092	1.061	1.239	1.264	1.220	1.260	1.252	1.183	7.55
96)	Benzo[a]pyre	1.052	1.038	1.103	1.135	1.005	0.925	1.086	1.128	1.059	6.62
97)	Indeno[1,2,3]	1.434	1.405	1.437	1.392	1.278	1.141	1.387	1.438	1.364	7.64
98)	Dibenz[a,h]a	1.166	1.148	1.178	1.156	1.061	0.945	1.156	1.199	1.126	7.43
99)	Benzo[g,h,i]	1.183	1.161	1.183	1.138	1.096	1.011	1.161	1.175	1.139	5.19

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(#) = Out of Range    ### Number of calibration levels exceeded format    ###

W130530\_8270+.m

Fri May 31 15:37:31 2013

9.7.1

9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12588.D Vial: 9  
 Acq On : 30 May 2013 12:36 pm Operator: kristinr  
 Sample : ICV579-50 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	89	0.00	4.21
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline		-----NA-----				
5 S	2-Fluorophenol	1.083	1.078	0.5	89	0.00	3.26
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5	1.320	1.259	4.6	83	0.00	3.94
8 C	Phenol	1.408	1.400	0.6	87	0.00	3.95
9 M	2-Chlorophenol	1.289	1.280	0.7	88	0.00	4.07
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol	1.091	1.090	0.1	86	0.00	4.43
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols	1.179	1.189	-0.8	87	0.00	4.55
20	4-methylphenol	1.179	1.189	-0.8	87	0.00	4.55
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06		4.21
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	88	0.00	5.27
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol	0.196	0.198	-1.0	85	0.00	4.97
28 T	2,4-Dimethylphenol	0.332	0.337	-1.5	87	0.00	4.99
29 T	bis(2-Chloroethoxy)methan		-----NA-----				

		Amount	Calc.	%Drift		
30 T	Benzoic acid	50.000	56.295	-12.6	98	-0.01
						5.08
		AvgRF	CCRF	%Dev		
31 C	2,4-Dichlorophenol	0.345	0.349	-1.2	86	0.00
32 M	1,2,4-Trichlorobenzene		-----NA-----			
33 T	Naphthalene		-----NA-----			
34 T	2,6-Dichlorophenol	0.342	0.345	-0.9	86	0.00
35 T	4-Chloroaniline		-----NA-----			
36 C	Hexachlorobutadiene		-----NA-----			

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol	0.295	0.298	-1.0	86	0.00	5.76
38 T	2-Methylnaphthalene		-----NA-----				
39 T	1-Methylnaphthalene		-----NA-----				
40 T	1,2,4,5-Tetrachlorobenzene		-----NA-----				
41 I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42	Caprolactam		-----NA-----				
43 I	Acenaphthene-d10	1.000	1.000	0.0	88	0.00	6.81
44 T	Pentachloronitrobenzene		-----NA-----				
45 P	Hexachlorocyclopentadiene		-----NA-----				
46 C	2,4,6-Trichlorophenol	0.436	0.434	0.5	85	0.00	6.15
47 T	2,4,5-Trichlorophenol	0.464	0.482	-3.9	88	0.00	6.18
48 S	2-Fluorobiphenyl		-----NA-----				
49 T	2-Chloronaphthalene		-----NA-----				
50 M	Acenaphthylene		-----NA-----				
51 T	Dimethylphthalate		-----NA-----				
52 T	2,4-Dinitrotoluene		-----NA-----				
53 C	Acenaphthene		-----NA-----				
54 P	2,4-Dinitrophenol	0.230	0.208	9.6	79	0.00	6.87
55 T	Dibenzofuran		-----NA-----				
56 M	2,6-Dinitrotoluene		-----NA-----				
57 P	4-Nitrophenol	0.183	0.197	-7.7	90	0.00	6.93
58 T	2,3,4,6-Tetrachlorophenol	0.463	0.474	-2.4	86	0.00	7.14
59 T	Fluorene		-----NA-----				
60 T	4-Chlorophenyl-phenylethane		-----NA-----				
61 T	Diethylphthalate		-----NA-----				
62 T	2-nitroaniline		-----NA-----				
63 T	3-nitroaniline		-----NA-----				
64 T	4-nitroaniline		-----NA-----				
65	Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.05	6.81
66	1,1'-Biphenyl		-----NA-----				
67 I	Phenanthrene-d10	1.000	1.000	0.0	90	0.00	8.22
68 T	4,6-Dinitro-2-methylphenol	0.159	0.162	-1.9	89	-0.01	7.39
69 C	n-Nitrosodiphenylamine		-----NA-----				
70 T	1,2-Diphenylhydrazine		-----NA-----				
71 S	2,4,6-Tribromophenol	0.161	0.152	5.6	83	0.00	7.55
72 T	4-Bromophenyl-phenylether		-----NA-----				
73 T	Hexachlorobenzene		-----NA-----				
74 C	Pentachlorophenol	0.218	0.234	-7.3	94	0.00	8.09
75 T	Phenanthrene		-----NA-----				
76 T	Anthracene		-----NA-----				
77 T	Carbazole		-----NA-----				
78 T	Di-n-butylphthalate		-----NA-----				
79 C	Fluoranthene		-----NA-----				
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81	Atrazine		-----NA-----				
82 I	Chrysene-d12	1.000	1.000	0.0	98	-0.01	11.20
83 T	Benzidine		-----NA-----				
84 M	Pyrene		-----NA-----				
85 S	Terphenyl-d14		-----NA-----				
86	3,3-Dimethylbenzidine		-----NA-----				
87 T	Butylbenzylphthalate		-----NA-----				
88 T	3,3'-Dichlorobenzidine		-----NA-----				
89 T	Benzo[a]anthracene		-----NA-----				
90 T	Chrysene		-----NA-----				

9.7.2  
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# Initial Calibration Verification

Page 3 of 3

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat		-----NA-----							
92 I	Perylene-d12	1.000	1.000	0.0	100	0.00	12.79			
93 C	Di-n-octylphthalate		-----NA-----							
94 T	Benzo[b]fluoranthene		-----NA-----							
95 T	Benzo[k]fluoranthene		-----NA-----							
96 C	Benzo[a]pyrene		-----NA-----							
97 T	Indeno[1,2,3-cd]pyrene		-----NA-----							
98 T	Dibenz[a,h]anthracene		-----NA-----							
99 T	Benzo[g,h,i]perylene		-----NA-----							

(#) = Out of Range  
w12584.D W130530\_8270+.m

SPCC's out = 2 CCC's out = 7  
Fri May 31 15:20:54 2013

9.7.2  
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**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12589.D Vial: 10  
 Acq On : 30 May 2013 12:59 pm Operator: kristinr  
 Sample : ICV579-20 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	86	0.00
2 S	N-nitrosodimethylamine	0.628	0.652	-3.8	88	0.00
3 T	Pyridine	1.179	1.137	3.6	82	0.02
4 T	Aniline			-----NA-----		
5 S	2-Fluorophenol			-----NA-----		
6 T	bis(2-Chloroethyl)ether	0.675	0.679	-0.6	85	0.00
7 S	Phenol-d5			-----NA-----		
8 C	Phenol			-----NA-----		
9 M	2-Chlorophenol			-----NA-----		
10 T	1,3-Dichlorobenzene	1.484	1.533	-3.3	88	0.00
11 C	1,4-Dichlorobenzene	1.568	1.591	-1.5	87	0.00
12 T	1,2-Dichlorobenzene	1.431	1.491	-4.2	88	0.00
13 T	Benzyl alcohol	0.798	0.799	-0.1	87	0.00
14 T	bis(2-chloroisopropyl)eth	0.887	1.057	-19.2	100	0.00
15 T	o-cresol			-----NA-----		
16 T	Acetophenone	1.718	1.695	1.3	82	0.00
17 T	Hexachloroethane	0.493	0.510	-3.4	88	0.00
18 P	N-Nitroso-di-n-propylamin	0.721	0.744	-3.2	88	-0.01
19 T	m+p-cresols			-----NA-----		
20	4-methylphenol			-----NA-----		
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06	4.21
22	Benzaldehyde			-----NA-----		
23 I	Naphthalene-d8	1.000	1.000	0.0	86	0.00
24 S	Nitrobenzene-d5	0.295	0.296	-0.3	83	0.00
25 T	Nitrobenzene	0.304	0.308	-1.3	84	0.00
26 T	Isophorone	0.565	0.550	2.7	82	-0.01
27 C	2-Nitrophenol			-----NA-----		
28 T	2,4-Dimethylphenol			-----NA-----		
29 T	bis(2-Chloroethoxy)methan	0.356	0.363	-2.0	87	0.00
30 T	Benzoic acid			-----NA-----		
31 C	2,4-Dichlorophenol			-----NA-----		
32 M	1,2,4-Trichlorobenzene	0.383	0.404	-5.5	91	0.00
33 T	Naphthalene	1.033	1.076	-4.2	89	0.00
34 T	2,6-Dichlorophenol			-----NA-----		
35 T	4-Chloroaniline			-----NA-----		
36 C	Hexachlorobutadiene	0.249	0.259	-4.0	89	0.00

# Initial Calibration Verification

Page 2 of 3

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----NA-----				
38 T	2-Methylnaphthalene	0.768	0.785	-2.2	86	0.00	5.88
39 T	1-Methylnaphthalene	0.737	0.748	-1.5	85	0.00	5.98
40 T	1,2,4,5-Tetrachlorobenzene	0.475	0.483	-1.7	85	0.00	6.06
41 I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42	Caprolactam		-----NA-----				
43 I	Acenaphthene-d10	1.000	1.000	0.0	84	0.00	6.81
44 T	Pentachloronitrobenzene	0.185	0.183	1.1	84	0.00	8.17
45 P	Hexachlorocyclopentadiene	0.411	0.232	43.6#	49#	0.00	6.08
46 C	2,4,6-Trichlorophenol		-----NA-----				
47 T	2,4,5-Trichlorophenol		-----NA-----				
48 S	2-Fluorobiphenyl	1.373	1.399	-1.9	85	0.00	6.22
49 T	2-Chloronaphthalene	1.097	1.190	-8.5	91	0.00	6.30
50 M	Acenaphthylene	1.794	1.501	16.3	69	0.00	6.67
51 T	Dimethylphthalate	1.348	1.399	-3.8	86	0.00	6.60
52 T	2,4-Dinitrotoluene	0.394	0.416	-5.6	92	-0.01	7.01
53 C	Acenaphthene	1.113	1.206	-8.4	91	0.00	6.84
54 P	2,4-Dinitrophenol		-----NA-----				
55 T	Dibenzofuran	1.720	1.792	-4.2	86	0.00	6.98
56 M	2,6-Dinitrotoluene	0.299	0.295	1.3	87	0.00	6.66
57 P	4-Nitrophenol		-----NA-----				
58 T	2,3,4,6-Tetrachlorophenol		-----NA-----				
59 T	Fluorene	1.357	1.495	-10.2	92	0.00	7.30
60 T	4-Chlorophenyl-phenylether	0.766	0.839	-9.5	90	0.00	7.30
61 T	Diethylphthalate	1.221	1.313	-7.5	90	-0.01	7.24
62 T	2-nitroaniline	0.331	0.335	-1.2	92	0.00	6.42
63 T	3-nitroaniline	0.294	0.264	10.2	77	0.00	6.78
64 T	4-nitroaniline	0.295	0.295	0.0	87	-0.01	7.35
65	Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.26	6.60
66	1,1'-Biphenyl		-----NA-----				
67 I	Phenanthrene-d10	1.000	1.000	0.0	88	0.00	8.22
68 T	4,6-Dinitro-2-methylphenol		-----NA-----				
69 C	n-Nitrosodiphenylamine	0.524	0.506	3.4	85	0.00	7.41
70 T	1,2-Diphenylhydrazine	0.481	0.451	6.2	84	0.00	7.45
71 S	2,4,6-Tribromophenol		-----NA-----				
72 T	4-Bromophenyl-phenylether	0.275	0.275	0.0	89	0.00	7.77
73 T	Hexachlorobenzene	0.301	0.313	-4.0	91	0.00	7.92
74 C	Pentachlorophenol		-----NA-----				
75 T	Phenanthrene	1.083	1.134	-4.7	91	0.00	8.24
76 T	Anthracene	1.131	1.147	-1.4	87	0.00	8.29
77 T	Carbazole	0.969	1.039	-7.2	93	0.00	8.46
78 T	Di-n-butylphthalate	1.095	1.067	2.6	87	0.00	8.89
79 C	Fluoranthene	1.267	1.437	-13.4	98	0.00	9.53
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81	Atrazine		-----NA-----				
82 I	Chrysene-d12	1.000	1.000	0.0	95	0.00	11.20
83 T	Benzidine		-----NA-----				
84 M	Pyrene	1.061	1.071	-0.9	93	0.00	9.78
85 S	Terphenyl-d14	0.922	0.885	4.0	88	0.00	9.98
86	3,3-Dimethylbenzidine		-----NA-----				
87 T	Butylbenzylphthalate	0.319	0.307	3.8	96	0.00	10.60
88 T	3,3'-Dichlorobenzidine		-----NA-----				
89 T	Benzo[a]anthracene	1.057	1.145	-8.3	100	0.00	11.18
90 T	Chrysene	1.033	1.076	-4.2	97	0.00	11.23

9.7.3  
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# Initial Calibration Verification

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Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	0.489	0.457	6.5	94	0.00	11.32
92 I	Perylene-d12	1.000	1.000	0.0	94	0.00	12.79
93 C	Di-n-octylphthalate	0.753	0.778	-3.3	100	0.00	12.01
94 T	Benzo[b]fluoranthene	1.199	1.230	-2.6	99	0.00	12.40
95 T	Benzo[k]fluoranthene	1.183	1.256	-6.2	96	-0.01	12.42
96 C	Benzo[a]pyrene	1.059	1.015	4.2	84	-0.01	12.73
97 T	Indeno[1,2,3-cd]pyrene	1.364	1.430	-4.8	97	-0.02	13.97
98 T	Dibenz[a,h]anthracene	1.126	1.216	-8.0	99	-0.01	13.98
99 T	Benzo[g,h,i]perylene	1.139	1.192	-4.7	99	-0.01	14.29

(#) = Out of Range  
w12583.D W130530\_8270+.m

SPCC's out = 2 CCC's out = 6  
Fri May 31 15:36:06 2013

9.7.3

9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12590.D Vial: 11  
 Acq On : 30 May 2013 1:22 pm Operator: kristinr  
 Sample : ICV579-20 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.00	4.21
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline	0.559	0.531	5.0	75	0.00	3.98
5 S	2-Fluorophenol		-----NA-----				
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5		-----NA-----				
8 C	Phenol		-----NA-----				
9 M	2-Chlorophenol		-----NA-----				
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol		-----NA-----				
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols		-----NA-----				
20	4-methylphenol		-----NA-----				
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06	4.21	
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	81	0.00	5.27
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol		-----NA-----				
28 T	2,4-Dimethylphenol		-----NA-----				
29 T	bis(2-Chloroethoxy)methan		-----NA-----				
30 T	Benzoic acid		-----NA-----				
31 C	2,4-Dichlorophenol		-----NA-----				
32 M	1,2,4-Trichlorobenzene		-----NA-----				
33 T	Naphthalene		-----NA-----				
34 T	2,6-Dichlorophenol		-----NA-----				
35 T	4-Chloroaniline	0.439	0.399	9.1	72	0.00	5.35
36 C	Hexachlorobutadiene		-----NA-----				

# Initial Calibration Verification

Page 2 of 3

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----NA-----				
38 T	2-Methylnaphthalene		-----NA-----				
39 T	1-Methylnaphthalene		-----NA-----				
40 T	1,2,4,5-Tetrachlorobenzene		-----NA-----				
41 I	Naphthalene-d8a	1.000	1.000	0.0	0# -0.06	5.27	
42	Caprolactam		-----NA-----				
43 I	Acenaphthene-d10	1.000	1.000	0.0	78 0.00	6.81	
44 T	Pentachloronitrobenzene		-----NA-----				
45 P	Hexachlorocyclopentadiene		-----NA-----				
46 C	2,4,6-Trichlorophenol		-----NA-----				
47 T	2,4,5-Trichlorophenol		-----NA-----				
48 S	2-Fluorobiphenyl		-----NA-----				
49 T	2-Chloronaphthalene		-----NA-----				
50 M	Acenaphthylene		-----NA-----				
51 T	Dimethylphthalate		-----NA-----				
52 T	2,4-Dinitrotoluene		-----NA-----				
53 C	Acenaphthene		-----NA-----				
54 P	2,4-Dinitrophenol		-----NA-----				
55 T	Dibenzofuran		-----NA-----				
56 M	2,6-Dinitrotoluene		-----NA-----				
57 P	4-Nitrophenol		-----NA-----				
58 T	2,3,4,6-Tetrachlorophenol		-----NA-----				
59 T	Fluorene		-----NA-----				
60 T	4-Chlorophenyl-phenylethane		-----NA-----				
61 T	Diethylphthalate		-----NA-----				
62 T	2-nitroaniline		-----NA-----				
63 T	3-nitroaniline		-----NA-----				
64 T	4-nitroaniline		-----NA-----				
65	Acenaphthene-d10a	1.000	1.000	0.0	0# -0.05	6.81	
66	1,1'-Biphenyl		-----NA-----				
67 I	Phenanthrene-d10	1.000	1.000	0.0	79 0.00	8.22	
68 T	4,6-Dinitro-2-methylphenol		-----NA-----				
69 C	n-Nitrosodiphenylamine		-----NA-----				
70 T	1,2-Diphenylhydrazine		-----NA-----				
71 S	2,4,6-Tribromophenol		-----NA-----				
72 T	4-Bromophenyl-phenylether		-----NA-----				
73 T	Hexachlorobenzene		-----NA-----				
74 C	Pentachlorophenol		-----NA-----				
75 T	Phenanthrene		-----NA-----				
76 T	Anthracene		-----NA-----				
77 T	Carbazole		-----NA-----				
78 T	Di-n-butylphthalate		-----NA-----				
79 C	Fluoranthene		-----NA-----				
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0# 0.00	8.27	
81	Atrazine		-----NA-----				
82 I	Chrysene-d12	1.000	1.000	0.0	85 -0.01	11.20	
83 T	Benzidine	0.264	0.405	-53.4#	129 0.00	9.68	
84 M	Pyrene		-----NA-----				
85 S	Terphenyl-d14		-----NA-----				
86	3,3-Dimethylbenzidine		-----NA-----				
87 T	Butylbenzylphthalate		-----NA-----				
88 T	3,3'-Dichlorobenzidine	0.406	0.374	7.9	80 0.00	11.17	
89 T	Benzo[a]anthracene		-----NA-----				
90 T	Chrysene		-----NA-----				

9.7.4  
9

# Initial Calibration Verification

Page 3 of 3

Job Number: JB38711

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91	T	bis(2-Ethylhexyl)phthalat	-----	NA-----							
92	I	Perylene-d12	1.000	1.000	0.0	88	0.00	12.79			
93	C	Di-n-octylphthalate	-----	NA-----							
94	T	Benzo[b]fluoranthene	-----	NA-----							
95	T	Benzo[k]fluoranthene	-----	NA-----							
96	C	Benzo[a]pyrene	-----	NA-----							
97	T	Indeno[1,2,3-cd]pyrene	-----	NA-----							
98	T	Dibenz[a,h]anthracene	-----	NA-----							
99	T	Benzo[g,h,i]perylene	-----	NA-----							

(#) = Out of Range  
w12583.D W130530\_8270+.m

SPCC's out = 4 CCC's out = 13  
Fri May 31 15:36:08 2013

9.7.4  
9

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSW

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 10:52:01 2013  
 Response via : Initial Calibration

## Calibration Files

50	=W12593.D	5	=W12594.D	10	=W12595.D	20	=W12596.D
80	=W12598.D	40	=W12597.D	100	=W12599.D	120	=W12058.D
2	=w12108.D		=				

## Compound

	50	5	10	20	80	40	100	120	2	Avg	%RSD
<hr/>											
1) I 1,4-Dichlorobenzene-d							-----ISTD-----				
2) Methyl Methacrylate	0.586	0.548	0.550	0.558	0.548	0.562	0.558		0.559	2.39	
3) N-Nitrosodimethylamine	0.591	0.532	0.559	0.570	0.569	0.571	0.579		0.567	3.23	
4) Pyridine	1.118	1.057	1.044	1.044	1.071	1.106	1.087		1.075	2.73	
5) Ethyl Methacrylate	0.795	0.797	0.775	0.759	0.760	0.769	0.774		0.776	1.96	
6) 2-Picoline	1.222	1.193	1.161	1.185	1.198	1.199	1.220		1.197	1.76	
7) n-Nitrosomethylamine	0.479	0.447	0.458	0.470	0.467	0.472	0.475		0.467	2.34	
8) Methyl Methanesulfonate	0.545	0.529	0.532	0.535	0.536	0.531	0.541		0.536	1.09	
9) n-Nitrosodiethylamine	0.545	0.511	0.515	0.526	0.535	0.528	0.545		0.529	2.53	
10) Ethyl Methanesulfonate	0.761	0.720	0.734	0.747	0.748	0.739	0.756		0.743	1.86	
11) Aniline	1.738	1.618	1.633	1.652	1.747	1.705	1.749		1.692	3.34	
12) 2-Fluorophenol	1.053	0.988	0.995	1.009	1.047	1.038	1.053		1.026	2.73	
13) bis(2-Chloroethyl)ether	1.031	0.985	1.006	0.993	1.009	0.997	1.014		1.005	1.51	
14) Pentachloroethane	0.404	0.397	0.407	0.395	0.402	0.403	0.410		0.403	1.29	
15) Phenol-d5	1.261	1.179	1.212	1.226	1.281	1.265	1.286		1.244	3.20	
16) Phenol	1.343	1.224	1.261	1.287	1.352	1.323	1.370		1.308	4.05	
17) 2-Chlorophenol	1.259	1.193	1.203	1.223	1.249	1.225	1.267		1.231	2.28	
18) 1,3-Dichlorobenzene	1.424	1.377	1.395	1.388	1.415	1.415	1.425		1.405	1.34	
19) 1,4-Dichlorobenzene	1.496	1.470	1.476	1.461	1.492	1.479	1.489		1.480	0.84	
20) 1,2-Dichlorobenzene	1.378	1.326	1.342	1.353	1.363	1.357	1.365		1.355	1.25	
21) Benzyl alcohol	0.787	0.698	0.742	0.744	0.788	0.769	0.797		0.761	4.62	
22) bis(2-chloroisopropyl)ether	0.822	0.792	0.798	0.786	0.799	0.791	0.802		0.798	1.47	
23) o-cresol											

6.7.5

6

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

	1.070	1.019	1.024	1.034	1.073	1.055	1.085	1.051	2.46
24)	Acetophenone		1.653	1.604	1.606	1.629	1.640	1.640	1.630
25)	n-Nitrosopyrrolidine		0.586	0.486	0.512	0.544	0.586	0.573	0.599
26)	n-Nitrosomorpholine		0.589	0.551	0.564	0.574	0.578	0.576	0.586
27)	Hexachloroethane		0.471	0.457	0.449	0.463	0.467	0.464	0.469
28)	N-Nitroso-di-n-propylamine		0.736	0.644	0.697	0.712	0.715	0.710	0.713
29)	m+p-cresols		1.156	1.050	1.082	1.107	1.152	1.137	1.153
30)	4-methylphenol		1.156	1.050	1.082	1.107	1.152	1.137	1.153
31)	I Naphthalene-d8								-----ISTD-----
32)	Nitrobenzene-d5		0.286	0.277	0.277	0.283	0.291	0.290	0.289
33)	Nitrobenzene		0.303	0.295	0.298	0.299	0.301	0.301	0.301
34)	n-Nitrosopiperidine		0.161	0.149	0.153	0.157	0.161	0.159	0.164
35)	Isophorone		0.520	0.508	0.512	0.518	0.523	0.517	0.523
36)	2-Nitrophenol		0.194	0.169	0.179	0.186	0.196	0.191	0.199
37)	2,4-Dimethylphenol		0.320	0.315	0.308	0.317	0.323	0.323	0.324
38)	bis(2-Chloroethoxy)methane		0.433	0.420	0.424	0.423	0.435	0.432	0.440
39)	alpha, alpha-Dimethylphenethyl		0.032	0.033	0.036	0.035	0.033	0.038	0.029
40)	O,O,O-Triethyl phosphorothioate		0.149	0.142	0.148	0.146	0.156	0.151	0.154
41)	Benzoic acid		0.237		0.165	0.208	0.241	0.233	0.244
42)	2,4-Dichlorophenol		0.335	0.314	0.323	0.331	0.338	0.334	0.344
43)	1,2,4-Trichlorobenzene		0.364	0.362	0.357	0.359	0.364	0.368	0.367
44)	Naphthalene		0.973	0.968	0.974	0.976	0.973	0.978	0.981
45)	2,6-Dichlorophenol		0.328	0.316	0.329	0.328	0.334	0.332	0.336
46)	4-Chloroaniline		0.429	0.401	0.410	0.417	0.436	0.427	0.443
47)	Hexachloropropene		0.268	0.245	0.252	0.259	0.278	0.271	0.275
48)	Hexachlorobutadiene		0.238	0.234	0.236	0.234	0.240	0.238	0.240
49)	n-Nitroso-di-n-butylamine		0.203	0.183	0.194	0.197	0.206	0.204	0.208
50)	p-phenylenediamine		0.224	0.241	0.259	0.210	0.176	0.256	0.197
51)	4-Chloro-3-methylphenol		0.296	0.276	0.272	0.277	0.289	0.288	0.286
52)	Safrole		0.317	0.312	0.313	0.312	0.326	0.319	0.319
53)	2-Methylnaphthalene								

6.7.5

6

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID:

W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

54)	1-methylnaphthalene	0.740 0.722 0.728 0.725 0.738 0.735 0.741	0.732	1.05
		0.693 0.678 0.682 0.697 0.701 0.704 0.700	0.694	1.44
55)	I Acenaphthene-d10	-----ISTD-----		
56)	Hexachlorocyclopentadiene	0.180 0.155 0.164 0.171 0.181 0.181 0.184	0.174	6.22
57)	1,2,4,5-Tetrachlorobenzene	0.644 0.658 0.657 0.667 0.634 0.660 0.629	0.650	2.23
58)	2,4,6-Trichlorophenol	0.414 0.391 0.400 0.420 0.419 0.419 0.428	0.413	3.13
59)	2,4,5-Trichlorophenol	0.453 0.441 0.434 0.452 0.451 0.457 0.460	0.450	1.99
60)	2-Fluorobiphenyl	1.250 1.266 1.274 1.299 1.261 1.294 1.245	1.270	1.62
61)	2-Choronaphthalene	1.138 1.153 1.142 1.154 1.171 1.170 1.183	1.159	1.42
62)	1-Choronaphthalene	0.933 0.931 0.958 0.955 0.922 0.959 0.939	0.943	1.57
63)	Isosafrole	0.422 0.404 0.415 0.428 0.425 0.440 0.430	0.423	2.68
64)	1,4-Naphthoquinone	0.424 0.472 0.467 0.460 0.409 0.448 0.410	0.442	6.09
65)	Acenaphthylene	1.703 1.707 1.694 1.740 1.693 1.730 1.721	1.713	1.06
66)	Dimethylphthalate	1.263 1.271 1.264 1.277 1.268 1.292 1.279	1.273	0.78
67)	1,3-Dinitrobenzene	0.215 0.160 0.180 0.201 0.224 0.222 0.229	0.204	12.67
68)	2,6-Dinitrotoluene	0.299 0.258 0.272 0.292 0.305 0.301 0.309	0.291	6.46
69)	Acenaphthene	1.040 1.062 1.057 1.061 1.043 1.065 1.054	1.055	0.91
70)	2,4-Dinitrophenol	0.230 0.200 0.238 0.229 0.248	0.229	7.81
71)	Pentachlorobenzene	0.681 0.679 0.691 0.691 0.678 0.691 0.695	0.687	1.00
72)	Dibenzofuran	1.610 1.643 1.642 1.656 1.635 1.656 1.654	1.642	1.00
73)	2,4-Dinitrotoluene	0.384 0.340 0.347 0.372 0.397 0.392 0.402	0.377	6.48
74)	4-Nitrophenol	0.176 0.153 0.165 0.176 0.178 0.186	0.172	6.87
75)	o-toluidine	0.670 0.675 0.664 0.676 0.669 0.679 0.679	0.673	0.84
76)	1-Naphthylamine	0.544 0.554 0.553 0.554 0.533 0.551 0.539	0.547	1.53
77)	2,3,4,6-Tetrachlorophenol	0.446 0.430 0.434 0.449 0.446 0.457 0.447	0.444	2.08
78)	2-Naphthylamine	1.182 1.121 1.135 1.162 1.181 1.196 1.190	1.167	2.48
79)	Fluorene	1.271 1.255 1.269 1.273 1.263 1.296 1.270	1.271	1.01
80)	4-Chlorophenyl-phenylether	0.720 0.737 0.747 0.744 0.722 0.738 0.723	0.733	1.51
81)	5-Nitro-o-toluidine	0.369 0.316 0.333 0.352 0.374 0.373 0.378	0.357	6.68
82)	Diethylphthalate	1.135 1.128 1.147 1.158 1.160 1.170 1.159	1.151	1.30
83)	2-nitroaniline			

**Initial Calibration Summary**

Job Number: JB38711

Sample:

MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID:

W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

84)	3-nitroaniline	0.329 0.248 0.277 0.312 0.339 0.329 0.346	0.312	11.58
85)	4-nitroaniline	0.289 0.238 0.258 0.277 0.291 0.293 0.301	0.278	8.04
86)	I Phenanthrene-d10	-----ISTD-----		
87)	tetraethyl dithiopyrophosphate	0.156 0.119 0.138 0.168 0.154 0.175	0.152	13.40
88)	4,6-Dinitro-2-methylphenol	0.159 0.137 0.148 0.162 0.156 0.165	0.154	6.78
89)	Thionazin	0.083 0.071 0.078 0.086 0.084 0.087	0.081	7.53
90)	phorate	0.258 0.201 0.218 0.238 0.241 0.238 0.219	0.231	8.21
91)	parathion	0.108 0.082 0.091 0.101 0.112 0.109 0.112	0.102	11.28
92)	methyl parathion	0.188 0.136 0.153 0.173 0.182 0.184 0.180	0.171	11.29
93)	Disulfoton	0.235 0.187 0.184 0.212 0.227 0.217 0.226	0.212	9.44
94)	Dimethoate	0.172 0.137 0.146 0.158 0.169 0.170 0.170	0.160	8.65
95)	Diallate	0.184 0.172 0.179 0.179 0.178 0.182 0.180	0.179	2.12
96)	Diphenylamine	1.112 1.100 1.097 1.114 1.067 1.099 1.073	1.094	1.66
97)	n-Nitrosodiphenylamine	0.555 0.550 0.549 0.557 0.533 0.549 0.536	0.547	1.65
98)	1,2-Diphenylhydrazine	0.439 0.423 0.428 0.441 0.424 0.430 0.428	0.431	1.62
99)	2,4,6-Tribromophenol	0.162 0.152 0.153 0.157 0.164 0.162 0.162	0.159	2.98
100)	sym-Trinitrobenzene	0.126 0.098 0.112 0.136 0.125	0.119	12.45
101)	Phenacetin	0.285 0.253 0.261 0.275 0.283 0.280 0.284	0.274	4.61
102)	4-Bromophenyl-phenylether	0.268 0.261 0.264 0.267 0.266 0.265 0.269	0.266	0.94
103)	Hexachlorobenzene	0.291 0.289 0.286 0.290 0.292 0.291 0.292	0.290	0.75
104)	Pentachlorophenol	0.221 0.196 0.204 0.217 0.224 0.220 0.225	0.215	5.18
105)	4-Aminobiphenyl	1.112 1.100 1.097 1.114 1.067 1.099 1.073	1.094	1.66
106)	Pentachloronitrobenzene	0.095 0.087 0.091 0.093 0.094 0.094 0.094	0.093	3.21
107)	Pronamide	0.324 0.271 0.290 0.309 0.327 0.323 0.326	0.310	7.02
108)	2-sec-Butyl-4,6-Dinitrophenol	0.753 0.650 0.708 0.752 0.754 0.740	0.726	5.67
109)	Phenanthrene	1.020 1.022 1.018 1.030 1.003 1.016 1.004	1.016	0.96
110)	Anthracene	1.081 1.088 1.087 1.101 1.048 1.094 1.038	1.077	2.23
111)	Carbazole	0.956 0.943 0.924 0.939 0.938 0.939 0.933	0.939	1.03
112)	Di-n-butylphthalate	1.089 1.001 1.028 1.059 1.073 1.081 1.069	1.057	2.98
113)	4-Nitroquinoline-1-oxide			

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

0.064	0.025	0.040	0.075	0.059	0.080		0.057	36.82
---- Quadratic regression ---- Coefficient = 0.9986								
Response Ratio = -0.00806 + 0.05318 *A + 0.01261 *A^2								
114) Methapyrilene								
	0.159	0.122	0.136	0.146	0.170	0.163	0.171	
115) Isodrin								
	0.120	0.117	0.117	0.120	0.122	0.122	0.119	
116) Fluoranthene								
	1.246	1.237	1.212	1.219	1.211	1.233	1.204	
117) I Chrysene-d12								
118) kepone								
	0.097	0.088						
---- Linear regression ---- Coefficient = 1.0000								
Response Ratio = 0.00233 + 0.07872 *A								
119) Famphur								
	0.025		0.012	0.022	0.025		0.021#	28.44
---- Quadratic regression ---- Coefficient = 0.9996								
Response Ratio = -0.01719 + 0.05204 *A + -0.01067 *A^2								
120) Benzidine								
	0.435		0.370	0.415	0.439	0.439	0.438	
121) Pyrene								
	0.996	0.974	0.997	1.036	0.978	1.013	0.974	
122) Terphenyl-d14								
	0.852	0.827	0.859	0.897	0.822	0.876	0.796	
123) Aramite								
	0.058	0.041	0.047	0.054	0.058	0.056	0.057	
124) p-Dimethylaminoazobenzene								
	0.237	0.200	0.220	0.235	0.232	0.238	0.231	
125) Chlorobenzilate								
	0.640	0.511	0.566	0.608	0.641	0.636	0.629	
126) 3,3'-Dimethylbenzidine								
	1.107	0.979	1.040	1.113	1.103	1.124	1.100	
127) Butylbenzylphthalate								
	0.345	0.303	0.320	0.332	0.344	0.344	0.344	
128) 2-Acetylaminofluorene								
	0.368		0.309	0.341	0.377	0.369	0.383	
129) 3,3'-Dichlorobenzidine								
	0.412	0.364	0.387	0.410	0.408	0.413	0.407	
130) Benzo[a]anthracene								
	0.995	0.998	1.011	1.025	0.974	1.006	0.968	
131) Chrysene								
	0.957	0.958	0.967	0.979	0.935	0.954	0.935	
132) bis(2-Ethylhexyl)phthalate								
	0.514	0.405	0.455	0.486	0.512	0.508	0.516	
133) I Perylene-d12								
134) Di-n-octylphthalate								
	0.856	0.621	0.709	0.772	0.872	0.830	0.851	
135) 7,12-Dimethylbenz(a)anthracene								
	0.582	0.555	0.568	0.578	0.575	0.583	0.562	
136) Benzo[b]fluoranthene								
	1.209	1.114	1.129	1.083	1.172	1.116		
137) Benzo[k]fluoranthene								
	1.089	1.076	1.132	1.210	1.116	1.162	1.059	
138) Benzo[a]pyrene								
	1.054	0.944	0.992	1.016	1.046	1.027	1.031	

**Initial Calibration Summary**

Job Number: JB38711

Sample: MSW580-ICC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12593.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

139)	Hexachlorophene	0.056	0.012	0.027	0.064	0.055	0.060	0.046#	45.35	
---- Linear regression ---- Coefficient = 0.9950										
Response Ratio = -0.01565 + 0.06835 *A										
140)	3-Methylcholanthrene	0.667	0.560	0.601	0.638	0.676	0.657	0.672	0.639	6.80
141)	Dibenz(a,j)acridine	0.930	0.744	0.783	0.862	0.952	0.905	0.960	0.877	9.64
142)	Indeno[1,2,3-cd]pyrene	1.354	1.213	1.276	1.325	1.368	1.340	1.355	1.319	4.22
143)	Dibenz[a,h]anthracene	1.118	1.017	1.065	1.110	1.132	1.117	1.121	1.097	3.79
144)	Benzo[g,h,i]perylene	1.092	0.986	1.040	1.073	1.116	1.091	1.105	1.072	4.20
145)	1,4-Dichlorobenzene-d	-----ISTD-----								
146)	Benzaldehyde	3.728	3.970	4.015	4.354	4.077		4.029	5.58	
147)	Naphthalene-d8a	-----ISTD-----								
148)	Caprolactam	0.143	0.135	0.144	0.135	0.162		0.144	7.72	
149)	Acenaphthene-d10a	-----ISTD-----								
150)	1,1'-Biphenyl	1.427	1.368	1.401	1.389	1.420	1.393	1.400	1.54	
151)	Phenanthrene-d10a	-----ISTD-----								
152)	Atrazine	0.223	0.212	0.216	0.215	0.219	0.217	0.217	1.95	

(#) = Out of Range   ### Number of calibration levels exceeded format   ###

W130530\_AP9+.m

Fri May 31 10:52:21 2013

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12604.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\W12604.D Vial: 8  
 Acq On : 30 May 2013 9:05 pm Operator: kristinr  
 Sample : icv580-20, Pyridine Inst : MSW  
 Misc : OP33195,MSW581,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 10:52:01 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	108	0.00	4.21
2	Methyl Methacrylate		-----NA-----				
3 T	N-Nitrosodimethylamine		-----NA-----				
4 T	Pyridine	0.941	1.038	-10.3	107	0.01	2.36
5 T	Ethyl Methacrylate		-----NA-----				
6 T	2-Picoline		-----NA-----				
7 T	n-Nitrosomethylethylamine		-----NA-----				
8 T	Methyl Methanesulfonate		-----NA-----				
9 T	n-Nitrosodiethylamine		-----NA-----				
10 T	Ethyl Methanesulfonate		-----NA-----				
11 T	Aniline		-----NA-----				
12 S	2-Fluorophenol		-----NA-----				
13 T	bis(2-Chloroethyl)ether		-----NA-----				
14 T	Pentachloroethane		-----NA-----				
15 S	Phenol-d5		-----NA-----				
16 C	Phenol		-----NA-----				
17 M	2-Chlorophenol		-----NA-----				
18 T	1,3-Dichlorobenzene		-----NA-----				
19 C	1,4-Dichlorobenzene		-----NA-----				
20 T	1,2-Dichlorobenzene		-----NA-----				
21 T	Benzyl alcohol		-----NA-----				
22 T	bis(2-chloroisopropyl)eth		-----NA-----				
23 T	o-cresol		-----NA-----				
24 T	Acetophenone		-----NA-----				
25 T	n-Nitrosopyrrolidine		-----NA-----				
26 T	n-Nitrosomorpholine		-----NA-----				
27 T	Hexachloroethane		-----NA-----				
28 P	N-Nitroso-di-n-propylamin		-----NA-----				
29 T	m+p-cresols		-----NA-----				
30	4-methylphenol		-----NA-----				
31 I	Naphthalene-d8	1.000	1.000	0.0	108	0.00	5.27
32 S	Nitrobenzene-d5		-----NA-----				
33 T	Nitrobenzene		-----NA-----				
34 T	n-Nitrosopiperidine		-----NA-----				
35 T	Isophorone		-----NA-----				
36 C	2-Nitrophenol		-----NA-----				
37 T	2,4-Dimethylphenol		-----NA-----				
38 T	bis(2-Chloroethoxy)methan		-----NA-----				
39 T	alpha, alpha-Dimethylphen		-----NA-----				
40 T	O,O,O-Triethyl phosphorot		-----NA-----				
41 T	Benzoic acid		-----NA-----				

9.7.6

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# Initial Calibration Verification

Page 2 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12604.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol		-----	-NA-----					
43 M	1,2,4-Trichlorobenzene		-----	-NA-----					
44 T	Naphthalene		-----	-NA-----					
45 T	2,6-Dichlorophenol		-----	-NA-----					
46 T	4-Chloroaniline		-----	-NA-----					
47 T	Hexachloropropene		-----	-NA-----					
48 C	Hexachlorobutadiene		-----	-NA-----					
49 T	n-Nitroso-di-n-butylamine		-----	-NA-----					
50 T	p-phenylenediamine		-----	-NA-----					
51 C	4-Chloro-3-methylphenol		-----	-NA-----					
52 T	Safrole		-----	-NA-----					
53 T	2-Methylnaphthalene		-----	-NA-----					
54	1-methylnaphthalene		-----	-NA-----					
55 I	Acenaphthene-d10	1.000	1.000	0.0	109	0.00	6.81		
56 P	Hexachlorocyclopentadiene		-----	-NA-----					
57 T	1,2,4,5-Tetrachlorobenzene		-----	-NA-----					
58 C	2,4,6-Trichlorophenol		-----	-NA-----					
59 T	2,4,5-Trichlorophenol		-----	-NA-----					
60 S	2-Fluorobiphenyl		-----	-NA-----					
61 T	2-Chloronaphthalene		-----	-NA-----					
62 T	1-Chloronaphthalene		-----	-NA-----					
63 T	Isosafrole		-----	-NA-----					
64 T	1,4-Naphthoquinone		-----	-NA-----					
65 M	Acenaphthylene		-----	-NA-----					
66 T	Dimethylphthalate		-----	-NA-----					
67 T	1,3-Dinitrobenzene		-----	-NA-----					
68 T	2,6-Dinitrotoluene		-----	-NA-----					
69 C	Acenaphthene		-----	-NA-----					
70 P	2,4-Dinitrophenol		-----	-NA-----					
71 T	Pentachlorobenzene		-----	-NA-----					
72 T	Dibenzofuran		-----	-NA-----					
73 M	2,4-Dinitrotoluene		-----	-NA-----					
74 P	4-Nitrophenol		-----	-NA-----					
75 T	o-toluidine		-----	-NA-----					
76 T	1-Naphthylamine		-----	-NA-----					
77 T	2,3,4,6-Tetrachlorophenol		-----	-NA-----					
78 T	2-Naphthylamine		-----	-NA-----					
79 T	Fluorene		-----	-NA-----					
80 T	4-Chlorophenyl-phenylethane		-----	-NA-----					
81 T	5-Nitro-o-toluidine		-----	-NA-----					
82 T	Diethylphthalate		-----	-NA-----					
83 T	2-nitroaniline		-----	-NA-----					
84 T	3-nitroaniline		-----	-NA-----					
85 T	4-nitroaniline		-----	-NA-----					
86 I	Phenanthrene-d10	1.000	1.000	0.0	115	-0.01	8.22		
87	tetraethyl dithiopyrophos		-----	-NA-----					
88 T	4,6-Dinitro-2-methylpheno		-----	-NA-----					
89 T	Thionazin		-----	-NA-----					
90 T	phorate		-----	-NA-----					
91 T	parathion		-----	-NA-----					
92 T	methyl parathion		-----	-NA-----					
93 T	Disulfoton		-----	-NA-----					
94 T	Dimethoate		-----	-NA-----					
95 T	Diallate		-----	-NA-----					
96 C	Diphenylamine		-----	-NA-----					
97 C	n-Nitrosodiphenylamine		-----	-NA-----					
98 T	1,2-Diphenylhydrazine		-----	-NA-----					
99 S	2,4,6-Tribromophenol		-----	-NA-----					

9.7.6  
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# Initial Calibration Verification

Page 3 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12604.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene	-----	NA	-----				
101 T	Phenacetin	-----	NA	-----				
102 T	4-Bromophenyl-phenylether	-----	NA	-----				
103 T	Hexachlorobenzene	-----	NA	-----				
104 C	Pentachlorophenol	-----	NA	-----				
105 T	4-Aminobiphenyl	-----	NA	-----				
106 T	Pentachloronitrobenzene	-----	NA	-----				
107 T	Pronamide	-----	NA	-----				
108 T	2-sec-Butyl-4,6-Dinitroph	-----	NA	-----				
109 T	Phenanthrene	-----	NA	-----				
110 T	Anthracene	-----	NA	-----				
111 T	Carbazole	-----	NA	-----				
112 T	Di-n-butylphthalate	-----	NA	-----				
----- Amount Calc. %Drift -----								
113 T	4-Nitroquinoline-1-oxide	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
114 T	Methapyrilene	-----	NA	-----				
115 T	Isodrin	-----	NA	-----				
116 C	Fluoranthene	-----	NA	-----				
117 I	Chrysene-d12	1.000	1.000	0.0	123	-0.01	11.20	
----- Amount Calc. %Drift -----								
118 T	kepone	-----	NA	-----				
119 T	Famphur	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
120 T	Benzidine	-----	NA	-----				
121 M	Pyrene	-----	NA	-----				
122 S	Terphenyl-d14	-----	NA	-----				
123 T	Aramite	-----	NA	-----				
124 T	p-Dimethylaminoazobenzene	-----	NA	-----				
125 T	Chlorobenzilate	-----	NA	-----				
126 T	3,3'-Dimethylbenzidine	-----	NA	-----				
127 T	Butylbenzylphthalate	-----	NA	-----				
128 T	2-Acetylaminofluorene	-----	NA	-----				
129 T	3,3'-Dichlorobenzidine	-----	NA	-----				
130 T	Benzo[alanthracene	-----	NA	-----				
131 T	Chrysene	-----	NA	-----				
132 T	bis(2-Ethylhexyl)phthalat	-----	NA	-----				
133 I	Perylene-d12	1.000	1.000	0.0	120	-0.01	12.79	
134 C	Di-n-octylphthalate	-----	NA	-----				
135 T	7,12-Dimethylbenz(a)anthr	-----	NA	-----				
136 T	Benzo[b]fluoranthene	-----	NA	-----				
137 T	Benzo[k]fluoranthene	-----	NA	-----				
138 C	Benzo[a]pyrene	-----	NA	-----				
----- Amount Calc. %Drift -----								
139 T	Hexachlorophene	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
140 T	3-Methylcholanthrene	-----	NA	-----				
141 T	Dibenz(a,j)acridine	-----	NA	-----				
142 T	Indeno[1,2,3-cd]pyrene	-----	NA	-----				
143 T	Dibenz[a,h]anthracene	-----	NA	-----				
144 T	Benzo[g,h,i]perylene	-----	NA	-----				

9.7.6  
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# Initial Calibration Verification

Page 4 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12604.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

(#) = Out of Range  
W12596.D W130530\_AP9+.m

SPCC's out = 4 CCC's out = 14  
Fri May 31 11:03:34 2013

9.7.6  
9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12605.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\W12605.D Vial: 9  
 Acq On : 30 May 2013 9:28 pm Operator: kristinr  
 Sample : icv580-20, ANILINE Inst : MSW  
 Misc : OP33195,MSW581,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 09:44:02 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	115	0.00	4.21
2	Methyl Methacrylate		-----	NA	-----		
3 T	N-Nitrosodimethylamine		-----	NA	-----		
4 T	Pyridine		-----	NA	-----		
5 T	Ethyl Methacrylate		-----	NA	-----		
6 T	2-Picoline		-----	NA	-----		
7 T	n-Nitrosomethylethylamine		-----	NA	-----		
8 T	Methyl Methanesulfonate		-----	NA	-----		
9 T	n-Nitrosodiethylamine		-----	NA	-----		
10 T	Ethyl Methanesulfonate		-----	NA	-----		
11 T	Aniline	1.480	1.512	-2.2	106	0.00	3.98
12 S	2-Fluorophenol		-----	NA	-----		
13 T	bis(2-Chloroethyl)ether		-----	NA	-----		
14 T	Pentachloroethane		-----	NA	-----		
15 S	Phenol-d5		-----	NA	-----		
16 C	Phenol		-----	NA	-----		
17 M	2-Chlorophenol		-----	NA	-----		
18 T	1,3-Dichlorobenzene		-----	NA	-----		
19 C	1,4-Dichlorobenzene		-----	NA	-----		
20 T	1,2-Dichlorobenzene		-----	NA	-----		
21 T	Benzyl alcohol		-----	NA	-----		
22 T	bis(2-chloroisopropyl)eth		-----	NA	-----		
23 T	o-cresol		-----	NA	-----		
24 T	Acetophenone		-----	NA	-----		
25 T	n-Nitrosopyrrolidine		-----	NA	-----		
26 T	n-Nitrosomorpholine		-----	NA	-----		
27 T	Hexachloroethane		-----	NA	-----		
28 P	N-Nitroso-di-n-propylamin		-----	NA	-----		
29 T	m+p-cresols		-----	NA	-----		
30	4-methylphenol		-----	NA	-----		
31 I	Naphthalene-d8	1.000	1.000	0.0	113	0.00	5.27
32 S	Nitrobenzene-d5		-----	NA	-----		
33 T	Nitrobenzene		-----	NA	-----		
34 T	n-Nitrosopiperidine		-----	NA	-----		
35 T	Isophorone		-----	NA	-----		
36 C	2-Nitrophenol		-----	NA	-----		
37 T	2,4-Dimethylphenol		-----	NA	-----		
38 T	bis(2-Chloroethoxy)methan		-----	NA	-----		
39 T	alpha, alpha-Dimethylphen		-----	NA	-----		
40 T	O,O,O-Triethyl phosphorot		-----	NA	-----		
41 T	Benzoic acid		-----	NA	-----		

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12605.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol		-----	-NA-----					
43 M	1,2,4-Trichlorobenzene		-----	-NA-----					
44 T	Naphthalene		-----	-NA-----					
45 T	2,6-Dichlorophenol		-----	-NA-----					
46 T	4-Chloroaniline	0.370	0.408	-10.3	110	-0.01		5.34	
47 T	Hexachloropropene		-----	-NA-----					
48 C	Hexachlorobutadiene		-----	-NA-----					
49 T	n-Nitroso-di-n-butylamine		-----	-NA-----					
50 T	p-phenylenediamine		-----	-NA-----					
51 C	4-Chloro-3-methylphenol		-----	-NA-----					
52 T	Safrole		-----	-NA-----					
53 T	2-Methylnaphthalene		-----	-NA-----					
54	1-methylnaphthalene		-----	-NA-----					
55 I	Acenaphthene-d10	1.000	1.000	0.0	112	0.00		6.81	
56 P	Hexachlorocyclopentadiene		-----	-NA-----					
57 T	1,2,4,5-Tetrachlorobenzene		-----	-NA-----					
58 C	2,4,6-Trichlorophenol		-----	-NA-----					
59 T	2,4,5-Trichlorophenol		-----	-NA-----					
60 S	2-Fluorobiphenyl		-----	-NA-----					
61 T	2-Chloronaphthalene		-----	-NA-----					
62 T	1-Chloronaphthalene		-----	-NA-----					
63 T	Isosafrole		-----	-NA-----					
64 T	1,4-Naphthoquinone		-----	-NA-----					
65 M	Acenaphthylene		-----	-NA-----					
66 T	Dimethylphthalate		-----	-NA-----					
67 T	1,3-Dinitrobenzene		-----	-NA-----					
68 T	2,6-Dinitrotoluene		-----	-NA-----					
69 C	Acenaphthene		-----	-NA-----					
70 P	2,4-Dinitrophenol		-----	-NA-----					
71 T	Pentachlorobenzene		-----	-NA-----					
72 T	Dibenzofuran		-----	-NA-----					
73 M	2,4-Dinitrotoluene		-----	-NA-----					
74 P	4-Nitrophenol		-----	-NA-----					
75 T	o-toluidine		-----	-NA-----					
76 T	1-Naphthylamine		-----	-NA-----					
77 T	2,3,4,6-Tetrachlorophenol		-----	-NA-----					
78 T	2-Naphthylamine		-----	-NA-----					
79 T	Fluorene		-----	-NA-----					
80 T	4-Chlorophenyl-phenylethane		-----	-NA-----					
81 T	5-Nitro-o-toluidine		-----	-NA-----					
82 T	Diethylphthalate		-----	-NA-----					
83 T	2-nitroaniline		-----	-NA-----					
84 T	3-nitroaniline		-----	-NA-----					
85 T	4-nitroaniline		-----	-NA-----					
86 I	Phenanthrene-d10	1.000	1.000	0.0	114	-0.01		8.22	
87	tetraethyl dithiopyrophos		-----	-NA-----					
88 T	4,6-Dinitro-2-methylpheno		-----	-NA-----					
89 T	Thionazin		-----	-NA-----					
90 T	phorate		-----	-NA-----					
91 T	parathion		-----	-NA-----					
92 T	methyl parathion		-----	-NA-----					
93 T	Disulfoton		-----	-NA-----					
94 T	Dimethoate		-----	-NA-----					
95 T	Diallate		-----	-NA-----					
96 C	Diphenylamine		-----	-NA-----					
97 C	n-Nitrosodiphenylamine		-----	-NA-----					
98 T	1,2-Diphenylhydrazine		-----	-NA-----					
99 S	2,4,6-Tribromophenol		-----	-NA-----					

9.7.7  
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# Initial Calibration Verification

Page 3 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12605.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene	-----	NA	-----				
101 T	Phenacetin	-----	NA	-----				
102 T	4-Bromophenyl-phenylether	-----	NA	-----				
103 T	Hexachlorobenzene	-----	NA	-----				
104 C	Pentachlorophenol	-----	NA	-----				
105 T	4-Aminobiphenyl	-----	NA	-----				
106 T	Pentachloronitrobenzene	-----	NA	-----				
107 T	Pronamide	-----	NA	-----				
108 T	2-sec-Butyl-4,6-Dinitroph	-----	NA	-----				
109 T	Phenanthrene	-----	NA	-----				
110 T	Anthracene	-----	NA	-----				
111 T	Carbazole	-----	NA	-----				
112 T	Di-n-butylphthalate	-----	NA	-----				
----- Amount Calc. %Drift -----								
113 T	4-Nitroquinoline-1-oxide	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
114 T	Methapyrilene	-----	NA	-----				
115 T	Isodrin	-----	NA	-----				
116 C	Fluoranthene	-----	NA	-----				
117 I	Chrysene-d12	1.000	1.000	0.0	122	-0.01	11.20	
----- Amount Calc. %Drift -----								
118 T	kepone	-----	NA	-----				
119 T	Famphur	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
120 T	Benzidine	0.423	0.471	-11.3	138	-0.01	9.69	
121 M	Pyrene	-----	NA	-----				
122 S	Terphenyl-d14	-----	NA	-----				
123 T	Aramite	-----	NA	-----				
124 T	p-Dimethylaminoazobenzene	-----	NA	-----				
125 T	Chlorobenzilate	-----	NA	-----				
126 T	3,3'-Dimethylbenzidine	-----	NA	-----				
127 T	Butylbenzylphthalate	-----	NA	-----				
128 T	2-Acetylaminofluorene	-----	NA	-----				
129 T	3,3'-Dichlorobenzidine	0.350	0.406	-16.0	120	-0.01	11.17	
130 T	Benzo[alanthracene	-----	NA	-----				
131 T	Chrysene	-----	NA	-----				
132 T	bis(2-Ethylhexyl)phthalat	-----	NA	-----				
133 I	Perylene-d12	1.000	1.000	0.0	122	-0.01	12.79	
134 C	Di-n-octylphthalate	-----	NA	-----				
135 T	7,12-Dimethylbenz(a)anthr	-----	NA	-----				
136 T	Benzo[b]fluoranthene	-----	NA	-----				
137 T	Benzo[k]fluoranthene	-----	NA	-----				
138 C	Benzo[a]pyrene	-----	NA	-----				
----- Amount Calc. %Drift -----								
139 T	Hexachlorophene	-----	NA	-----				
----- AvgRF CCRF %Dev -----								
140 T	3-Methylcholanthrene	-----	NA	-----				
141 T	Dibenz(a,j)acridine	-----	NA	-----				
142 T	Indeno[1,2,3-cd]pyrene	-----	NA	-----				
143 T	Dibenz[a,h]anthracene	-----	NA	-----				
144 T	Benzo[g,h,i]perylene	-----	NA	-----				

9.7.7  
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# Initial Calibration Verification

Page 4 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12605.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

(#) = Out of Range  
W12596.D W130530\_AP9+.m

SPCC's out = 4 CCC's out = 14  
Fri May 31 10:37:14 2013

9.7.7

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**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12606.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\W12606.D Vial: 10  
 Acq On : 30 May 2013 9:51 pm Operator: kristinr  
 Sample : icv580-50, ACID Inst : MSW  
 Misc : OP33195,MSW581,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 09:44:02 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	106	0.00	4.21
2	Methyl Methacrylate		-----NA-----				
3 T	N-Nitrosodimethylamine		-----NA-----				
4 T	Pyridine		-----NA-----				
5 T	Ethyl Methacrylate		-----NA-----				
6 T	2-Picoline		-----NA-----				
7 T	n-Nitrosomethylethylamine		-----NA-----				
8 T	Methyl Methanesulfonate		-----NA-----				
9 T	n-Nitrosodiethylamine		-----NA-----				
10 T	Ethyl Methanesulfonate		-----NA-----				
11 T	Aniline		-----NA-----				
12 S	2-Fluorophenol	1.026	1.078	-5.1	108	0.00	3.26
13 T	bis(2-Chloroethyl)ether		-----NA-----				
14 T	Pentachloroethane		-----NA-----				
15 S	Phenol-d5	1.244	1.236	0.6	104	0.00	3.94
16 C	Phenol	1.145	1.358	-18.6	107	0.00	3.96
17 M	2-Chlorophenol	1.077	1.278	-18.7	107	0.00	4.07
18 T	1,3-Dichlorobenzene		-----NA-----				
19 C	1,4-Dichlorobenzene		-----NA-----				
20 T	1,2-Dichlorobenzene		-----NA-----				
21 T	Benzyl alcohol		-----NA-----				
22 T	bis(2-chloroisopropyl)eth		-----NA-----				
23 T	o-cresol	0.920	1.079	-17.3	107	-0.01	4.43
24 T	Acetophenone		-----NA-----				
25 T	n-Nitrosopyrrolidine		-----NA-----				
26 T	n-Nitrosomorpholine		-----NA-----				
27 T	Hexachloroethane		-----NA-----				
28 P	N-Nitroso-di-n-propylamin		-----NA-----				
29 T	m+p-cresols	0.980	1.159	-18.3	106	0.00	4.55
30	4-methylphenol	0.980	1.159	-18.3	106	0.00	4.55
31 I	Naphthalene-d8	1.000	1.000	0.0	103	0.00	5.27
32 S	Nitrobenzene-d5	0.285	0.278	2.4	100	-0.01	4.68
33 T	Nitrobenzene		-----NA-----				
34 T	n-Nitrosopiperidine		-----NA-----				
35 T	Isophorone		-----NA-----				
36 C	2-Nitrophenol	0.188	0.197	-4.8	104	0.00	4.96
37 T	2,4-Dimethylphenol	0.279	0.328	-17.6	105	0.00	4.99
38 T	bis(2-Chloroethoxy)methan		-----NA-----				
39 T	alpha, alpha-Dimethylphen		-----NA-----				
40 T	O,O,O-Triethyl phosphorot		-----NA-----				
41 T	Benzoic acid	0.190	0.284	-49.5#	123	0.00	5.08

9.7.8

6

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12606.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol	0.290	0.348	-20.0	107	0.00	5.16
43 M	1,2,4-Trichlorobenzene		-----	NA			
44 T	Naphthalene		-----	NA			
45 T	2,6-Dichlorophenol	0.288	0.345	-19.8	108	0.00	5.35
46 T	4-Chloroaniline		-----	NA			
47 T	Hexachloropropene		-----	NA			
48 C	Hexachlorobutadiene		-----	NA			
49 T	n-Nitroso-di-n-butylamine		-----	NA			
50 T	p-phenylenediamine		-----	NA			
51 C	4-Chloro-3-methylphenol	0.248	0.295	-19.0	103	0.00	5.76
52 T	Safrole		-----	NA			
53 T	2-Methylnaphthalene		-----	NA			
54	1-methylnaphthalene		-----	NA			
55 I	Acenaphthene-d10	1.000	1.000	0.0	103	0.00	6.81
56 P	Hexachlorocyclopentadiene		-----	NA			
57 T	1,2,4,5-Tetrachlorobenzene		-----	NA			
58 C	2,4,6-Trichlorophenol	0.361	0.433	-19.9	107	0.00	6.15
59 T	2,4,5-Trichlorophenol	0.393	0.458	-16.5	104	0.00	6.18
60 S	2-Fluorobiphenyl	1.270	1.298	-2.2	106	0.00	6.21
61 T	2-Chloronaphthalene		-----	NA			
62 T	1-Chloronaphthalene		-----	NA			
63 T	Isosafrole		-----	NA			
64 T	1,4-Naphthoquinone		-----	NA			
65 M	Acenaphthylene		-----	NA			
66 T	Dimethylphthalate		-----	NA			
67 T	1,3-Dinitrobenzene		-----	NA			
68 T	2,6-Dinitrotoluene		-----	NA			
69 C	Acenaphthene		-----	NA			
70 P	2,4-Dinitrophenol	0.191	0.200	-4.7	89	-0.01	6.87
71 T	Pentachlorobenzene		-----	NA			
72 T	Dibenzofuran		-----	NA			
73 M	2,4-Dinitrotoluene		-----	NA			
74 P	4-Nitrophenol	0.148	0.179	-20.9#	104	-0.01	6.93
75 T	o-toluidine		-----	NA			
76 T	1-Naphthylamine		-----	NA			
77 T	2,3,4,6-Tetrachlorophenol		-----	NA			
78 T	2-Naphthylamine		-----	NA			
79 T	Fluorene		-----	NA			
80 T	4-Chlorophenyl-phenylethane		-----	NA			
81 T	5-Nitro-o-toluidine		-----	NA			
82 T	Diethylphthalate		-----	NA			
83 T	2-nitroaniline		-----	NA			
84 T	3-nitroaniline		-----	NA			
85 T	4-nitroaniline		-----	NA			
86 I	Phenanthrene-d10	1.000	1.000	0.0	108	-0.01	8.22
87	tetraethyl dithiopyrophos		-----	NA			
88 T	4,6-Dinitro-2-methylpheno	0.154	0.164	-6.5	111	-0.01	7.39
89 T	Thionazin		-----	NA			
90 T	phorate		-----	NA			
91 T	parathion		-----	NA			
92 T	methyl parathion		-----	NA			
93 T	Disulfoton		-----	NA			
94 T	Dimethoate		-----	NA			
95 T	Diallate		-----	NA			
96 C	Diphenylamine		-----	NA			
97 C	n-Nitrosodiphenylamine		-----	NA			
98 T	1,2-Diphenylhydrazine		-----	NA			
99 S	2,4,6-Tribromophenol	0.159	0.158	0.6	104	0.00	7.55

# Initial Calibration Verification

Page 3 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12606.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene		-----	NA	-----			
101 T	Phenacetin		-----	NA	-----			
102 T	4-Bromophenyl-phenylether		-----	NA	-----			
103 T	Hexachlorobenzene		-----	NA	-----			
104 C	Pentachlorophenol	0.215	0.231	-7.4	112	-0.01	8.09	
105 T	4-Aminobiphenyl		-----	NA	-----			
106 T	Pentachloronitrobenzene		-----	NA	-----			
107 T	Pronamide		-----	NA	-----			
108 T	2-sec-Butyl-4,6-Dinitroph		-----	NA	-----			
109 T	Phenanthrene		-----	NA	-----			
110 T	Anthracene		-----	NA	-----			
111 T	Carbazole		-----	NA	-----			
112 T	Di-n-butylphthalate		-----	NA	-----			
----- Amount Calc. %Drift -----								
113 T	4-Nitroquinoline-1-oxide		-----	NA	-----			
----- AvgRF CCRF %Dev -----								
114 T	Methapyrilene		-----	NA	-----			
115 T	Isodrin		-----	NA	-----			
116 C	Fluoranthene		-----	NA	-----			
117 I	Chrysene-d12	1.000	1.000	0.0	113	-0.01	11.20	
----- Amount Calc. %Drift -----								
118 T	kepone		-----	NA	-----			
119 T	Famphur		-----	NA	-----			
----- AvgRF CCRF %Dev -----								
120 T	Benzidine		-----	NA	-----			
121 M	Pyrene		-----	NA	-----			
122 S	Terphenyl-d14	0.847	0.414	51.1#	55	-0.01	9.98	
123 T	Aramite		-----	NA	-----			
124 T	p-Dimethylaminoazobenzene		-----	NA	-----			
125 T	Chlorobenzilate		-----	NA	-----			
126 T	3,3'-Dimethylbenzidine		-----	NA	-----			
127 T	Butylbenzylphthalate		-----	NA	-----			
128 T	2-Acetylaminofluorene		-----	NA	-----			
129 T	3,3'-Dichlorobenzidine		-----	NA	-----			
130 T	Benzo[alanthracene		-----	NA	-----			
131 T	Chrysene		-----	NA	-----			
132 T	bis(2-Ethylhexyl)phthalat		-----	NA	-----			
133 I	Perylene-d12	1.000	1.000	0.0	117	-0.01	12.79	
134 C	Di-n-octylphthalate		-----	NA	-----			
135 T	7,12-Dimethylbenz(a)anthr		-----	NA	-----			
136 T	Benzo[b]fluoranthene		-----	NA	-----			
137 T	Benzo[k]fluoranthene		-----	NA	-----			
138 C	Benzo[a]pyrene		-----	NA	-----			
----- Amount Calc. %Drift -----								
139 T	Hexachlorophene		-----	NA	-----			
----- AvgRF CCRF %Dev -----								
140 T	3-Methylcholanthrene		-----	NA	-----			
141 T	Dibenz(a,j)acridine		-----	NA	-----			
142 T	Indeno[1,2,3-cd]pyrene		-----	NA	-----			
143 T	Dibenz[a,h]anthracene		-----	NA	-----			
144 T	Benzo[g,h,i]perylene		-----	NA	-----			

9.7.8  
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# Initial Calibration Verification

Page 4 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12606.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

(#) = Out of Range  
W12593.D W130530\_AP9+.m

SPCC's out = 2 CCC's out = 8  
Fri May 31 10:42:57 2013

9.7.8  
9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12607.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\W12607.D Vial: 11  
 Acq On : 30 May 2013 10:14 pm Operator: kristinr  
 Sample : icv580-50, AP9 Inst : MSW  
 Misc : OP33195,MSW581,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 10:52:01 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I 1,4-Dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	4.21
2	Methyl Methacrylate		-----NA-----				
3	T N-Nitrosodimethylamine		-----NA-----				
4	T Pyridine		-----NA-----				
5	T Ethyl Methacrylate		-----NA-----				
6	T 2-Picoline		-----NA-----				
7	T n-Nitrosomethylethylamine		-----NA-----				
8	T Methyl Methanesulfonate		-----NA-----				
9	T n-Nitrosodiethylamine		-----NA-----				
10	T Ethyl Methanesulfonate		-----NA-----				
11	T Aniline		-----NA-----				
12	S 2-Fluorophenol		-----NA-----				
13	T bis(2-Chloroethyl)ether		-----NA-----				
14	T Pentachloroethane		-----NA-----				
15	S Phenol-d5		-----NA-----				
16	C Phenol		-----NA-----				
17	M 2-Chlorophenol		-----NA-----				
18	T 1,3-Dichlorobenzene		-----NA-----				
19	C 1,4-Dichlorobenzene		-----NA-----				
20	T 1,2-Dichlorobenzene		-----NA-----				
21	T Benzyl alcohol		-----NA-----				
22	T bis(2-chloroisopropyl)eth		-----NA-----				
23	T o-cresol		-----NA-----				
24	T Acetophenone		-----NA-----				
25	T n-Nitrosopyrrolidine		-----NA-----				
26	T n-Nitrosomorpholine		-----NA-----				
27	T Hexachloroethane		-----NA-----				
28	P N-Nitroso-di-n-propylamin		-----NA-----				
29	T m+p-cresols		-----NA-----				
30	T 4-methylphenol		-----NA-----				
31	I Naphthalene-d8	1.000	1.000	0.0	97	0.00	5.27
32	S Nitrobenzene-d5		-----NA-----				
33	T Nitrobenzene		-----NA-----				
34	T n-Nitrosopiperidine		-----NA-----				
35	T Isophorone		-----NA-----				
36	C 2-Nitrophenol		-----NA-----				
37	T 2,4-Dimethylphenol		-----NA-----				
38	T bis(2-Chloroethoxy)methan		-----NA-----				
39	T alpha, alpha-Dimethylphen		-----NA-----				
40	T O,O,O-Triethyl phosphorot		-----NA-----				
41	T Benzoic acid		-----NA-----				

# Initial Calibration Verification

Page 2 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12607.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol		-----	-NA-----						
43 M	1,2,4-Trichlorobenzene		-----	-NA-----						
44 T	Naphthalene		-----	-NA-----						
45 T	2,6-Dichlorophenol		-----	-NA-----						
46 T	4-Chloroaniline		-----	-NA-----						
47 T	Hexachloropropene		-----	-NA-----						
48 C	Hexachlorobutadiene		-----	-NA-----						
49 T	n-Nitroso-di-n-butylamine		-----	-NA-----						
50 T	p-phenylenediamine		-----	-NA-----						
51 C	4-Chloro-3-methylphenol		-----	-NA-----						
52 T	Safrole		-----	-NA-----						
53 T	2-Methylnaphthalene		-----	-NA-----						
54	1-methylnaphthalene		-----	-NA-----						
55 I	Acenaphthene-d10	1.000	1.000	0.0	98	0.00	6.81			
56 P	Hexachlorocyclopentadiene		-----	-NA-----						
57 T	1,2,4,5-Tetrachlorobenzene		-----	-NA-----						
58 C	2,4,6-Trichlorophenol		-----	-NA-----						
59 T	2,4,5-Trichlorophenol		-----	-NA-----						
60 S	2-Fluorobiphenyl		-----	-NA-----						
61 T	2-Chloronaphthalene		-----	-NA-----						
62 T	1-Chloronaphthalene		-----	-NA-----						
63 T	Isosafrole		-----	-NA-----						
64 T	1,4-Naphthoquinone		-----	-NA-----						
65 M	Acenaphthylene		-----	-NA-----						
66 T	Dimethylphthalate		-----	-NA-----						
67 T	1,3-Dinitrobenzene		-----	-NA-----						
68 T	2,6-Dinitrotoluene		-----	-NA-----						
69 C	Acenaphthene		-----	-NA-----						
70 P	2,4-Dinitrophenol		-----	-NA-----						
71 T	Pentachlorobenzene		-----	-NA-----						
72 T	Dibenzofuran		-----	-NA-----						
73 M	2,4-Dinitrotoluene		-----	-NA-----						
74 P	4-Nitrophenol		-----	-NA-----						
75 T	o-toluidine		-----	-NA-----						
76 T	1-Naphthylamine		-----	-NA-----						
77 T	2,3,4,6-Tetrachlorophenol		-----	-NA-----						
78 T	2-Naphthylamine		-----	-NA-----						
79 T	Fluorene		-----	-NA-----						
80 T	4-Chlorophenyl-phenylethane		-----	-NA-----						
81 T	5-Nitro-o-toluidine		-----	-NA-----						
82 T	Diethylphthalate		-----	-NA-----						
83 T	2-nitroaniline		-----	-NA-----						
84 T	3-nitroaniline		-----	-NA-----						
85 T	4-nitroaniline		-----	-NA-----						
86 I	Phenanthrene-d10	1.000	1.000	0.0	103	0.00	8.22			
87	tetraethyl dithiopyrophos		-----	-NA-----						
88 T	4,6-Dinitro-2-methylpheno		-----	-NA-----						
89 T	Thionazin		-----	-NA-----						
90 T	phorate		-----	-NA-----						
91 T	parathion		-----	-NA-----						
92 T	methyl parathion		-----	-NA-----						
93 T	Disulfoton		-----	-NA-----						
94 T	Dimethoate		-----	-NA-----						
95 T	Diallate		-----	-NA-----						
96 C	Diphenylamine		-----	-NA-----						
97 C	n-Nitrosodiphenylamine		-----	-NA-----						
98 T	1,2-Diphenylhydrazine		-----	-NA-----						
99 S	2,4,6-Tribromophenol		-----	-NA-----						

9.7.9  
9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12607.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene	-----	-NA-----								
101 T	Phenacetin	-----	-NA-----								
102 T	4-Bromophenyl-phenylether	-----	-NA-----								
103 T	Hexachlorobenzene	-----	-NA-----								
104 C	Pentachlorophenol	-----	-NA-----								
105 T	4-Aminobiphenyl	-----	-NA-----								
106 T	Pentachloronitrobenzene	-----	-NA-----								
107 T	Pronamide	-----	-NA-----								
108 T	2-sec-Butyl-4,6-Dinitroph	-----	-NA-----								
109 T	Phenanthrene	-----	-NA-----								
110 T	Anthracene	-----	-NA-----								
111 T	Carbazole	-----	-NA-----								
112 T	Di-n-butylphthalate	-----	-NA-----								
----- Amount Calc. %Drift -----											
113 T	4-Nitroquinoline-1-oxide	-----	-NA-----								
----- AvgRF CCRF %Dev -----											
114 T	Methapyrilene	-----	-NA-----								
115 T	Isodrin	-----	-NA-----								
116 C	Fluoranthene	-----	-NA-----								
117 I	Chrysene-d12	1.000	1.000	0.0	110	-0.01	11.20				
----- Amount Calc. %Drift -----											
118 T	kepone	-----	-NA-----								
119 T	Famphur	-----	-NA-----								
----- AvgRF CCRF %Dev -----											
120 T	Benzidine	-----	-NA-----								
121 M	Pyrene	-----	-NA-----								
122 S	Terphenyl-d14	-----	-NA-----								
123 T	Aramite	-----	-NA-----								
124 T	p-Dimethylaminoazobenzene	-----	-NA-----								
125 T	Chlorobenzilate	-----	-NA-----								
126 T	3,3'-Dimethylbenzidine	-----	-NA-----								
127 T	Butylbenzylphthalate	-----	-NA-----								
128 T	2-Acetylaminofluorene	-----	-NA-----								
129 T	3,3'-Dichlorobenzidine	-----	-NA-----								
130 T	Benzo[alanthracene	-----	-NA-----								
131 T	Chrysene	-----	-NA-----								
132 T	bis(2-Ethylhexyl)phthalat	-----	-NA-----								
133 I	Perylene-d12	1.000	1.000	0.0	112	0.00	12.80				
134 C	Di-n-octylphthalate	-----	-NA-----								
135 T	7,12-Dimethylbenz(a)anthr	-----	-NA-----								
136 T	Benzo[b]fluoranthene	-----	-NA-----								
137 T	Benzo[k]fluoranthene	-----	-NA-----								
138 C	Benzo[a]pyrene	-----	-NA-----								
----- Amount Calc. %Drift -----											
139 T	Hexachlorophene	50.000	46.115	7.8	102	0.00	12.62				
----- AvgRF CCRF %Dev -----											
140 T	3-Methylcholanthrene	-----	-NA-----								
141 T	Dibenz(a,j)acridine	-----	-NA-----								
142 T	Indeno[1,2,3-cd]pyrene	-----	-NA-----								
143 T	Dibenz[a,h]anthracene	-----	-NA-----								
144 T	Benzo[g,h,i]perylene	-----	-NA-----								

97.9  
9

# Initial Calibration Verification

Page 4 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12607.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

(#) = Out of Range  
W12593.D W130530\_AP9+.m

SPCC's out = 4 CCC's out = 14  
Fri May 31 11:05:48 2013

9.7.9

9

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12610.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\2\DATA\W130530\W12610.D Vial: 13  
 Acq On : 30 May 2013 11:24 pm Operator: kristinr  
 Sample : icv580-50 Inst : MSW  
 Misc : OP33380,MSW581,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 10:52:01 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I 1,4-Dichlorobenzene-d4	1.000	1.000	0.0	99	0.00	4.21
2	Methyl Methacrylate	0.489	0.302	38.2#	51	0.02	2.15
3	T N-Nitrosodimethylamine	0.496	0.447	9.9	75	0.02	2.36
4	T Pyridine			-----NA-----			
5	T Ethyl Methacrylate	0.679	0.546	19.6	68	0.01	2.64
6	T 2-Picoline	1.047	0.888	15.2	72	0.01	2.85
7	T n-Nitrosomethylethylamine	0.408	0.395	3.2	82	0.00	2.95
8	T Methyl Methanesulfonate			-----NA-----			
9	T n-Nitrosodiethylamine	0.463	0.454	1.9	82	0.00	3.44
10	T Ethyl Methanesulfonate			-----NA-----			
11	T Aniline			-----NA-----			
12	S 2-Fluorophenol			-----NA-----			
13	T bis(2-Chloroethyl)ether	0.879	0.803	8.6	77	0.00	4.02
14	T Pentachloroethane	0.352	0.342	2.8	84	0.00	3.99
15	S Phenol-d5			-----NA-----			
16	C Phenol			-----NA-----			
17	M 2-Chlorophenol			-----NA-----			
18	T 1,3-Dichlorobenzene	1.230	1.110	9.8	77	0.00	4.19
19	C 1,4-Dichlorobenzene	1.295	1.185	8.5	78	0.00	4.23
20	T 1,2-Dichlorobenzene	1.185	1.106	6.7	80	0.00	4.38
21	T Benzyl alcohol	0.666	0.611	8.3	77	0.00	4.33
22	T bis(2-chloroisopropyl)eth	0.699	0.763	-9.2	92	0.00	4.46
23	T o-cresol			-----NA-----			
24	T Acetophenone	1.425	1.353	5.1	81	0.00	4.56
25	T n-Nitrosopyrrolidine	0.486	0.504	-3.7	85	0.00	4.56
26	T n-Nitrosomorpholine	0.502	0.498	0.8	84	0.00	4.56
27	T Hexachloroethane	0.405	0.367	9.4	77	0.00	4.63
28	P N-Nitroso-di-n-propylamin	0.616	0.601	2.4	81	0.00	4.58
29	T m+p-cresols			-----NA-----			
30	T 4-methylphenol			-----NA-----			
31	I Naphthalene-d8	1.000	1.000	0.0	97	0.00	5.27
32	S Nitrobenzene-d5			-----NA-----			
33	T Nitrobenzene	0.262	0.233	11.1	75	0.00	4.70
34	T n-Nitrosopiperidine	0.138	0.138	0.0	84	0.00	4.82
35	T Isophorone	0.453	0.421	7.1	79	0.00	4.89
36	C 2-Nitrophenol			-----NA-----			
37	T 2,4-Dimethylphenol			-----NA-----			
38	T bis(2-Chloroethoxy)methan	0.376	0.373	0.8	84	0.00	5.07
39	T alpha, alpha-Dimethylphen	0.030	0.044#	-46.7#	133	-0.03	7.92
40	T O,O,O-Triethyl phosphorot	0.131	0.136	-3.8	89	0.00	5.08
41	T Benzoic acid			-----NA-----			

9710  
6

**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12610.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol		-----NA-----			
43 M	1,2,4-Trichlorobenzene	0.318	0.310	2.5	83	0.00
44 T	Naphthalene	0.853	0.833	2.3	83	0.00
45 T	2,6-Dichlorophenol		-----NA-----			
46 T	4-Chloroaniline	0.370	0.324	12.4	74	0.00
47 T	Hexachloropropene	0.231	0.237	-2.6	86	0.00
48 C	Hexachlorobutadiene	0.208	0.205	1.4	84	0.00
49 T	n-Nitroso-di-n-butylamine	0.174	0.176	-1.1	85	0.00
50 T	p-phenylenediamine	0.195	0.190	2.6	83	0.01
51 C	4-Chloro-3-methylphenol		-----NA-----			
52 T	Safrole	0.277	0.290	-4.7	89	0.00
53 T	2-Methylnaphthalene	0.641	0.580	9.5	76	0.00
54	1-methylnaphthalene	0.607	0.569	6.3	80	0.00
55 I	Acenaphthene-d10	1.000	1.000	0.0	98	0.00
56 P	Hexachlorocyclopentadiene	0.174	0.091	47.7#	49#	0.00
57 T	1,2,4,5-Tetrachlorobenzene	0.569	0.537	5.6	82	0.00
58 C	2,4,6-Trichlorophenol		-----NA-----			
59 T	2,4,5-Trichlorophenol		-----NA-----			
60 S	2-Fluorobiphenyl		-----NA-----			
61 T	2-Chloronaphthalene	1.014	1.025	-1.1	88	0.00
62 T	1-Chloronaphthalene	0.825	0.829	-0.5	87	0.00
63 T	Isosafrole	0.370	0.389	-5.1	90	0.00
64 T	1,4-Naphthoquinone	0.386	0.397	-2.8	92	0.00
65 M	Acenaphthylene	1.498	1.524	-1.7	88	0.00
66 T	Dimethylphthalate	1.114	1.135	-1.9	88	0.00
67 T	1,3-Dinitrobenzene	0.204	0.212	-3.9	97	0.00
68 T	2,6-Dinitrotoluene	0.255	0.264	-3.5	87	0.00
69 C	Acenaphthene	0.923	0.934	-1.2	88	0.00
70 P	2,4-Dinitrophenol		-----NA-----			
71 T	Pentachlorobenzene	0.601	0.619	-3.0	89	0.00
72 T	Dibenzofuran	1.437	1.360	5.4	83	0.00
73 M	2,4-Dinitrotoluene	0.329	0.379	-15.2	97	0.00
74 P	4-Nitrophenol		-----NA-----			
75 T	o-toluidine	0.589	0.551	6.5	81	0.00
76 T	1-Naphthylamine	0.478	0.518	-8.4	93	0.00
77 T	2,3,4,6-Tetrachlorophenol	0.444	0.427	3.8	94	0.00
78 T	2-Naphthylamine	1.021	0.898	12.0	75	0.00
79 T	Fluorene	1.112	1.190	-7.0	92	0.00
80 T	4-Chlorophenyl-phenylethane	0.641	0.661	-3.1	90	0.00
81 T	5-Nitro-o-toluidine	0.312	0.322	-3.2	86	0.00
82 T	Diethylphthalate	1.151	1.104	4.1	95	0.00
83 T	2-nitroaniline	0.273	0.286	-4.8	85	0.00
84 T	3-nitroaniline	0.243	0.246	-1.2	84	0.00
85 T	4-nitroaniline	0.250	0.251	-0.4	84	0.00
86 I	Phenanthrene-d10	1.000	1.000	0.0	103	0.00
87	tetraethyl dithiopyrophos	0.130	0.166	-27.7#	110	0.00
88 T	4,6-Dinitro-2-methylphenol		-----NA-----			
89 T	Thionazin	0.070	0.081	-15.7	101	0.00
90 T	phorate	0.202	0.242	-19.8	96	0.00
91 T	parathion	0.102	0.112	-9.8	107	0.00
92 T	methyl parathion	0.171	0.184	-7.6	101	0.00
93 T	Disulfoton	0.186	0.235	-26.3#	103	0.00
94 T	Dimethoate	0.160	0.176	-10.0	105	0.00
95 T	Diallate	0.157	0.171	-8.9	96	0.00
96 C	Diphenylamine	0.958	0.984	-2.7	91	0.00
97 C	n-Nitrosodiphenylamine	0.479	0.492	-2.7	91	0.00
98 T	1,2-Diphenylhydrazine	0.377	0.365	3.2	85	0.00
99 S	2,4,6-Tribromophenol		-----NA-----			

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**Initial Calibration Verification**

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12610.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene	0.100	0.118	-18.0	96	0.00	7.72
101 T	Phenacetin	0.240	0.271	-12.9	98	0.00	7.75
102 T	4-Bromophenyl-phenylether	0.233	0.235	-0.9	90	0.00	7.77
103 T	Hexachlorobenzene	0.254	0.273	-7.5	97	0.00	7.92
104 C	Pentachlorophenol			-----NA-----			
105 T	4-Aminobiphenyl	0.958	0.984	-2.7	91	0.00	7.42
106 T	Pentachloronitrobenzene	0.081	0.086	-6.2	94	0.00	8.18
107 T	Pronamide	0.271	0.315	-16.2	100	0.00	8.14
108 T	2-sec-Butyl-4,6-Dinitroph	0.726	0.489	32.6#	67	0.00	8.29
109 T	Phenanthrene	0.889	0.951	-7.0	96	0.00	8.25
110 T	Anthracene	0.942	0.967	-2.7	92	0.00	8.29
111 T	Carbazole	0.821	0.846	-3.0	91	0.00	8.46
112 T	Di-n-butylphthalate	0.925	0.988	-6.8	93	0.00	8.90
-----Amount-----				Calc.	%Drift	-----	
113 T	4-Nitroquinoline-1-oxide	50.000	53.070	-6.1	108	-0.01	9.09
-----AvgRF-----				CCRF	%Dev	-----	
114 T	Methapyrilene	0.153	0.175	-14.4	113	-0.01	9.22
115 T	Isodrin	0.104	0.119	-14.4	102	0.00	9.39
116 C	Fluoranthene	1.070	1.226	-14.6	101	0.00	9.53
117 I	Chrysene-d12	1.000	1.000	0.0	105	0.00	11.20
-----Amount-----				Calc.	%Drift	-----	
118 T	kepone	50.000	23.947	52.1#	0	0.16	10.75
119 T	Famphur	50.000	45.882	8.2	97	-0.01	11.09
-----AvgRF-----				CCRF	%Dev	-----	
120 T	Benzidine			-----NA-----			
121 M	Pyrene	0.871	0.925	-6.2	97	0.00	9.78
122 S	Terphenyl-d14			-----NA-----			
123 T	Aramite	0.053	0.058	-9.4	106	0.00	10.08
124 T	p-Dimethylaminoazobenzene	0.227	0.233	-2.6	103	-0.01	10.16
125 T	Chlorobenzilate	0.605	0.650	-7.4	107	-0.01	10.23
126 T	3,3'-Dimethylbenzidine	0.946	0.241	74.5#	23#	-0.01	10.55
127 T	Butylbenzylphthalate	0.291	0.339	-16.5	103	0.00	10.60
128 T	2-Acetylaminofluorene	0.358	0.379	-5.9	108	0.00	10.86
129 T	3,3'-Dichlorobenzidine			-----NA-----			
130 T	Benzo[alanthracene	0.872	0.997	-14.3	105	0.00	11.18
131 T	Chrysene	0.836	0.918	-9.8	101	-0.01	11.23
132 T	bis(2-Ethylhexyl)phthalat	0.425	0.494	-16.2	101	0.00	11.32
133 I	Perylene-d12	1.000	1.000	0.0	106	0.00	12.80
134 C	Di-n-octylphthalate	0.787	0.844	-7.2	105	0.00	12.01
135 T	7,12-Dimethylbenz(a)anthr	0.500	0.553	-10.6	101	0.00	12.42
136 T	Benzo[b]fluoranthene	0.975	1.165	-19.5	102	-0.01	12.40
137 T	Benzo[k]fluoranthene	0.980	1.002	-2.2	98	0.00	12.43
138 C	Benzo[a]pyrene	0.889	0.877	1.3	88	0.00	12.74
-----Amount-----				Calc.	%Drift	-----	
139 T	Hexachlorophene			-----NA-----			
-----AvgRF-----				CCRF	%Dev	-----	
140 T	3-Methylcholanthrene	0.639	0.642	-0.5	102	-0.01	13.13
141 T	Dibenz(a,j)acridine	0.877	0.869	0.9	99	0.00	13.76
142 T	Indeno[1,2,3-cd]pyrene	1.154	1.252	-8.5	98	0.00	13.98
143 T	Dibenz[a,h]anthracene	0.960	1.057	-10.1	100	-0.01	13.99
144 T	Benzo[g,h,i]perylene	0.938	1.027	-9.5	100	-0.01	14.30

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# Initial Calibration Verification

Page 4 of 4

Job Number: JB38711

Sample: MSW581-ICV580

Account: ALNJ Accutest New Jersey

Lab FileID: W12610.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

(#) = Out of Range  
W12593.D W130530\_AP9+.m

SPCC's out = 2 CCC's out = 6  
Fri May 31 10:58:05 2013

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## Continuing Calibration Summary

Job Number: JB38711

Sample: MSW596-CC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12944.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130610\w12944.D Vial: 100  
 Acq On : 10 Jun 2013 9:10 am Operator: kristinr  
 Sample : cc580-40 Inst : MSW  
 Misc : op33474,msw596,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\methods\W130530\_AP9+.m (RTE Integrator)  
 Title : SW-846 Method 8270  
 Last Update : Fri May 31 10:52:01 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	134	-0.04
2	Methyl Methacrylate	0.489	0.449	8.2	107	-0.03
3 T	N-Nitrosodimethylamine	0.496	0.482	2.8	113	-0.02
4 T	Pyridine	0.941	0.904	3.9	109	-0.03
5 T	Ethyl Methacrylate	0.679	0.657	3.2	114	-0.03
6 T	2-Picoline	1.047	1.043	0.4	116	-0.03
7 T	n-Nitrosomethylethylamine	0.408	0.406	0.5	115	-0.03
8 T	Methyl Methanesulfonate	0.469	0.417	11.1	105	-0.03
9 T	n-Nitrosodiethylamine	0.463	0.466	-0.6	118	-0.03
10 T	Ethyl Methanesulfonate	0.651	0.604	7.2	109	-0.03
11 T	Aniline	1.480	1.473	0.5	115	-0.03
12 S	2-Fluorophenol	1.026	0.924	9.9	119	-0.02
13 T	bis(2-Chloroethyl)ether	0.879	0.861	2.0	115	-0.03
14 T	Pentachloroethane	0.352	0.354	-0.6	117	-0.03
15 S	Phenol-d5	1.244	1.123	9.7	119	-0.03
16 C	Phenol	1.145	1.279	-11.7	129	-0.02
17 M	2-Chlorophenol	1.077	1.093	-1.5	119	-0.03
18 T	1,3-Dichlorobenzene	1.230	1.280	-4.1	121	-0.03
19 C	1,4-Dichlorobenzene	1.295	1.342	-3.6	121	-0.03
20 T	1,2-Dichlorobenzene	1.185	1.229	-3.7	121	-0.03
21 T	Benzyl alcohol	0.666	0.586	12.0	102	-0.03
22 T	bis(2-chloroisopropyl)eth	0.699	0.629	10.0	106	-0.03
23 T	o-cresol	0.920	0.923	-0.3	117	-0.03
24 T	Acetophenone	1.425	1.385	2.8	113	-0.04
25 T	n-Nitrosopyrrolidine	0.486	0.468	3.7	109	-0.04
26 T	n-Nitrosomorpholine	0.502	0.427	14.9	99	-0.04
27 T	Hexachloroethane	0.405	0.395	2.5	114	-0.04
28 P	N-Nitroso-di-n-propylamin	0.616	0.551	10.6	104	-0.04
29 T	m+p-cresols	0.980	0.938	4.3	110	-0.03
30	4-methylphenol	0.980	0.938	4.3	110	-0.03
31 I	Naphthalene-d8	1.000	1.000	0.0	127	-0.04
32 S	Nitrobenzene-d5	0.285	0.251	11.9	110	-0.04
33 T	Nitrobenzene	0.262	0.261	0.4	110	-0.04
34 T	n-Nitrosopiperidine	0.138	0.145	-5.1	116	-0.04
35 T	Isophorone	0.453	0.445	1.8	109	-0.04
36 C	2-Nitrophenol	0.188	0.179	4.8	119	-0.04
37 T	2,4-Dimethylphenol	0.279	0.277	0.7	109	-0.03
38 T	bis(2-Chloroethoxy)methan	0.376	0.374	0.5	110	-0.04
39 T	alpha, alpha-Dimethylphen	0.030	0.028#	6.7	95	-0.05
40 T	O,O,O-Triethyl phosphorot	0.131	0.136	-3.8	114	-0.04
41 T	Benzoic acid	0.190	0.165	13.2	90	-0.04

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# Continuing Calibration Summary

Page 2 of 4

Job Number: JB38711

Sample: MSW596-CC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12944.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

42 C	2,4-Dichlorophenol	0.290	0.304	-4.8	115	-0.03	5.13
43 M	1,2,4-Trichlorobenzene	0.318	0.334	-5.0	115	-0.04	5.20
44 T	Naphthalene	0.853	0.896	-5.0	116	-0.04	5.25
45 T	2,6-Dichlorophenol	0.288	0.297	-3.1	114	-0.04	5.32
46 T	4-Chloroaniline	0.370	0.387	-4.6	115	-0.04	5.32
47 T	Hexachloropropene	0.231	0.243	-5.2	114	-0.04	5.35
48 C	Hexachlorobutadiene	0.208	0.216	-3.8	115	-0.04	5.41
49 T	n-Nitroso-di-n-butylamine	0.174	0.166	4.6	103	-0.04	5.62
50 T	p-phenylenediamine	0.195	0.204	-4.6	101	-0.04	5.62
51 C	4-Chloro-3-methylphenol	0.248	0.254	-2.4	112	-0.03	5.73
52 T	Safrole	0.277	0.289	-4.3	115	-0.04	5.78
53 T	2-Methylnaphthalene	0.641	0.670	-4.5	116	-0.04	5.85
54	1-methylnaphthalene	0.607	0.637	-4.9	115	-0.04	5.94
55 I	Acenaphthene-d10	1.000	1.000	0.0	122	-0.04	6.77
56 P	Hexachlorocyclopentadiene	0.174	0.151	13.2	102	-0.04	6.04
57 T	1,2,4,5-Tetrachlorobenzene	0.569	0.613	-7.7	113	-0.04	6.03
58 C	2,4,6-Trichlorophenol	0.361	0.379	-5.0	110	-0.04	6.11
59 T	2,4,5-Trichlorophenol	0.393	0.409	-4.1	109	-0.03	6.15
60 S	2-Fluorobiphenyl	1.270	1.212	4.6	114	-0.04	6.18
61 T	2-Chloronaphthalene	1.014	1.074	-5.9	112	-0.04	6.27
62 T	1-Chloronaphthalene	0.825	0.878	-6.4	112	-0.04	6.30
63 T	Isosafrole	0.370	0.400	-8.1	111	-0.04	6.22
64 T	1,4-Naphthoquinone	0.386	0.398	-3.1	108	-0.04	6.42
65 M	Acenaphthylene	1.498	1.580	-5.5	111	-0.04	6.64
66 T	Dimethylphthalate	1.114	1.145	-2.8	108	-0.04	6.57
67 T	1,3-Dinitrobenzene	0.204	0.204	0.0	112	-0.04	6.58
68 T	2,6-Dinitrotoluene	0.255	0.277	-8.6	112	-0.04	6.63
69 C	Acenaphthene	0.923	0.978	-6.0	112	-0.04	6.80
70 P	2,4-Dinitrophenol	0.191	0.200	-4.7	107	-0.04	6.84
71 T	Pentachlorobenzene	0.601	0.634	-5.5	112	-0.04	6.97
72 T	Dibenzofuran	1.437	1.525	-6.1	112	-0.05	6.94
73 M	2,4-Dinitrotoluene	0.329	0.351	-6.7	109	-0.04	6.98
74 P	4-Nitrophenol	0.148	0.144	2.7	99	-0.03	6.91
75 T	o-toluidine	0.589	0.646	-9.7	116	-0.04	4.56
76 T	1-Naphthylamine	0.478	0.479	-0.2	106	-0.04	7.02
77 T	2,3,4,6-Tetrachlorophenol	0.444	0.398	10.4	106	-0.04	7.10
78 T	2-Naphthylamine	1.021	1.061	-3.9	108	-0.05	7.09
79 T	Fluorene	1.112	1.165	-4.8	109	-0.05	7.26
80 T	4-Chlorophenyl-phenylethane	0.641	0.659	-2.8	109	-0.05	7.26
81 T	5-Nitro-o-toluidine	0.312	0.332	-6.4	108	-0.04	7.30
82 T	Diethylphthalate	1.151	1.005	12.7	105	-0.05	7.20
83 T	2-nitroaniline	0.273	0.314	-15.0	116	-0.04	6.39
84 T	3-nitroaniline	0.243	0.267	-9.9	111	-0.04	6.75
85 T	4-nitroaniline	0.250	0.276	-10.4	113	-0.04	7.32
86 I	Phenanthrene-d10	1.000	1.000	0.0	115	-0.05	8.18
87	tetraethyl dithiopyrophos	0.130	0.179	-37.7#	134	-0.05	7.62
88 T	4,6-Dinitro-2-methylpheno	0.154	0.146	5.2	108	-0.04	7.36
89 T	Thionazin	0.070	0.083	-18.6	115	-0.05	7.28
90 T	phorate	0.202	0.214	-5.9	104	-0.05	7.70
91 T	parathion	0.102	0.096	5.9	102	-0.05	9.05
92 T	methyl parathion	0.171	0.163	4.7	102	-0.05	8.62
93 T	Disulfoton	0.186	0.211	-13.4	112	-0.05	8.22
94 T	Dimethoate	0.160	0.160	0.0	109	-0.05	7.88
95 T	Diallate	0.157	0.158	-0.6	100	-0.05	7.69
96 C	Diphenylamine	0.958	1.025	-7.0	107	-0.05	7.38
97 C	n-Nitrosodiphenylamine	0.479	0.513	-7.1	107	-0.05	7.38
98 T	1,2-Diphenylhydrazine	0.377	0.375	0.5	100	-0.05	7.41
99 S	2,4,6-Tribromophenol	0.159	0.157	1.3	111	-0.04	7.51

9.7.11  
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## Continuing Calibration Summary

Job Number: JB38711

Sample: MSW596-CC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12944.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

100 T	sym-Trinitrobenzene	0.100	0.117	-17.0	108	-0.03	7.69
101 T	Phenacetin	0.240	0.253	-5.4	104	-0.05	7.71
102 T	4-Bromophenyl-phenylether	0.233	0.253	-8.6	110	-0.05	7.72
103 T	Hexachlorobenzene	0.254	0.285	-12.2	113	-0.05	7.87
104 C	Pentachlorophenol	0.215	0.194	9.8	101	-0.05	8.05
105 T	4-Aminobiphenyl	0.958	1.025	-7.0	107	-0.05	7.38
106 T	Pentachloronitrobenzene	0.081	0.085	-4.9	104	-0.05	8.13
107 T	Pronamide	0.271	0.293	-8.1	104	-0.05	8.09
108 T	2-sec-Butyl-4,6-Dinitroph	0.726	0.695	4.3	106	-0.05	8.24
109 T	Phenanthrene	0.889	0.958	-7.8	109	-0.05	8.20
110 T	Anthracene	0.942	1.017	-8.0	107	-0.05	8.25
111 T	Carbazole	0.821	0.883	-7.6	108	-0.05	8.42
112 T	Di-n-butylphthalate	0.925	0.959	-3.7	102	-0.05	8.85
-----				Amount	Calc.	%Drift	-----
113 T	4-Nitroquinoline-1-oxide	40.000	47.265	-18.2	142	-0.05	9.05
-----				AvgRF	CCRF	%Dev	-----
114 T	Methapyrilene	0.153	0.182	-19.0	128	-0.06	9.17
115 T	Isodrin	0.104	0.109	-4.8	103	-0.06	9.33
116 C	Fluoranthene	1.070	1.138	-6.4	106	-0.05	9.48
117 I	Chrysene-d12	1.000	1.000	0.0	116	-0.06	11.15
-----				Amount	Calc.	%Drift	-----
118 T	kepone	40.000	12.192	69.5#	0	-0.06	10.53
119 T	Famphur	40.000	48.887	-22.2#	144	-0.06	11.04
-----				AvgRF	CCRF	%Dev	-----
120 T	Benzidine	0.423	0.405	4.3	107	-0.06	9.64
121 M	Pyrene	0.871	0.917	-5.3	105	-0.05	9.74
122 S	Terphenyl-d14	0.847	0.796	6.0	106	-0.06	9.93
123 T	Aramite	0.053	0.058	-9.4	121	-0.06	10.03
124 T	p-Dimethylaminoazobenzene	0.227	0.210	7.5	103	-0.06	10.11
125 T	Chlorobenzilate	0.605	0.624	-3.1	114	-0.06	10.18
126 T	3,3'-Dimethylbenzidine	0.946	1.027	-8.6	106	-0.06	10.50
127 T	Butylbenzylphthalate	0.291	0.313	-7.6	106	-0.05	10.55
128 T	2-Acetylaminofluorene	0.358	0.361	-0.8	114	-0.06	10.81
129 T	3,3'-Dichlorobenzidine	0.350	0.394	-12.6	111	-0.06	11.12
130 T	Benzo[alanthracene	0.872	0.915	-4.9	106	-0.06	11.13
131 T	Chrysene	0.836	0.884	-5.7	108	-0.06	11.18
132 T	bis(2-Ethylhexyl)phthalat	0.425	0.467	-9.9	107	-0.06	11.26
133 I	Perylene-d12	1.000	1.000	0.0	119	-0.06	12.74
134 C	Di-n-octylphthalate	0.787	0.736	6.5	106	-0.06	11.96
135 T	7,12-Dimethylbenz(a)anthr	0.500	0.514	-2.8	105	-0.06	12.37
136 T	Benzo[b]fluoranthene	0.975	1.113	-14.2	119	-0.06	12.35
137 T	Benzo[k]fluoranthene	0.980	0.979	0.1	101	-0.06	12.38
138 C	Benzo[a]pyrene	0.889	0.933	-4.9	109	-0.06	12.68
-----				Amount	Calc.	%Drift	-----
139 T	Hexachlorophene	40.000	41.402	-3.5	120	-0.05	12.57
-----				AvgRF	CCRF	%Dev	-----
140 T	3-Methylcholanthrene	0.639	0.604	5.5	110	-0.06	13.07
141 T	Dibenz(a,j)acridine	0.877	0.876	0.1	116	-0.07	13.69
142 T	Indeno[1,2,3-cd]pyrene	1.154	1.233	-6.8	110	-0.08	13.91
143 T	Dibenz[a,h]anthracene	0.960	1.027	-7.0	110	-0.08	13.92
144 T	Benzo[g,h,i]perylene	0.938	1.001	-6.7	110	-0.09	14.23

9.7.11

6

**Continuing Calibration Summary**

Job Number: JB38711

Sample: MSW596-CC580

Account: ALNJ Accutest New Jersey

Lab FileID: W12944.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

145	1,4-Dichlorobenzene-d4a	-----NA-----
146	Benzaldehyde	-----NA-----
147	Naphthalene-d8a	-----NA-----
148	Caprolactam	-----NA-----
149	Acenaphthene-d10a	-----NA-----
150	1,1'-Biphenyl	-----NA-----
151	Phenanthrene-d10a	-----NA-----
152	Atrazine	-----NA-----

---

( # ) = Out of Range  
W12597.D W130530\_AP9+.mSPCC's out = 0 CCC's out = 0  
Tue Jun 11 16:07:21 2013

9.7.11

6

**Continuing Calibration Summary**

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12963.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130610\w12963.D Vial: 96  
 Acq On : 10 Jun 2013 5:01 pm Operator: kristinr  
 Sample : cc579-50, tcl11 Inst : MSW  
 Misc : op33474,msw597,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu Jun 06 09:42:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	117	0.07	4.18
2	N-nitrosodimethylamine		-----	NA			
3 T	Pyridine		-----	NA			
4 T	Aniline		-----	NA			
5 S	2-Fluorophenol		-----	NA			
6 T	bis(2-Chloroethyl)ether		-----	NA			
7 S	Phenol-d5		-----	NA			
8 C	Phenol		-----	NA			
9 M	2-Chlorophenol		-----	NA			
10 T	1,3-Dichlorobenzene		-----	NA			
11 C	1,4-Dichlorobenzene		-----	NA			
12 T	1,2-Dichlorobenzene		-----	NA			
13 T	Benzyl alcohol		-----	NA			
14 T	bis(2-chloroisopropyl)eth		-----	NA			
15 T	o-cresol		-----	NA			
16 T	Acetophenone		-----	NA			
17 T	Hexachloroethane		-----	NA			
18 P	N-Nitroso-di-n-propylamin		-----	NA			
19 T	m+p-cresols		-----	NA			
20	4-methylphenol		-----	NA			
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	93	0.07	4.18
22	Benzaldehyde	4.052	3.463	14.5	84	0.09	4.53
23 I	Naphthalene-d8	1.000	1.000	0.0	111	0.07	5.24
24 S	Nitrobenzene-d5		-----	NA			
25 T	Nitrobenzene		-----	NA			
26 T	Isophorone		-----	NA			
27 C	2-Nitrophenol		-----	NA			
28 T	2,4-Dimethylphenol		-----	NA			
29 T	bis(2-Chloroethoxy)methan		-----	NA			
30 T	Benzoic acid		-----	Amount	Calc.	%Drift	-----
31 C	2,4-Dichlorophenol		-----	AvgRF	CCRF	%Dev	-----
32 M	1,2,4-Trichlorobenzene		-----		-----	NA	
33 T	Naphthalene		-----		-----	NA	
34 T	2,6-Dichlorophenol		-----		-----	NA	
35 T	4-Chloroaniline		-----		-----	NA	
36 C	Hexachlorobutadiene		-----		-----	NA	

# Continuing Calibration Summary

Page 2 of 3

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12963.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----	NA-----			
38 T	2-Methylnaphthalene		-----	NA-----			
39 T	1-Methylnaphthalene		-----	NA-----			
40 T	1,2,4,5-Tetrachlorobenzene		-----	NA-----			
41 I	Naphthalene-d8a	1.000	1.000	0.0	85	0.07	5.24
42	Caprolactam	0.144	0.089	38.2#	53	0.10	5.60
43 I	Acenaphthene-d10	1.000	1.000	0.0	108	0.08	6.78
44 T	Pentachloronitrobenzene		-----	NA-----			
45 P	Hexachlorocyclopentadiene		-----	NA-----			
46 C	2,4,6-Trichlorophenol		-----	NA-----			
47 T	2,4,5-Trichlorophenol		-----	NA-----			
48 S	2-Fluorobiphenyl		-----	NA-----			
49 T	2-Chloronaphthalene		-----	NA-----			
50 M	Acenaphthylene		-----	NA-----			
51 T	Dimethylphthalate		-----	NA-----			
52 T	2,4-Dinitrotoluene		-----	NA-----			
53 C	Acenaphthene		-----	NA-----			
54 P	2,4-Dinitrophenol		-----	NA-----			
55 T	Dibenzofuran		-----	NA-----			
56 M	2,6-Dinitrotoluene		-----	NA-----			
57 P	4-Nitrophenol		-----	NA-----			
58 T	2,3,4,6-Tetrachlorophenol		-----	NA-----			
59 T	Fluorene		-----	NA-----			
60 T	4-Chlorophenyl-phenylethane		-----	NA-----			
61 T	Diethylphthalate		-----	NA-----			
62 T	2-nitroaniline		-----	NA-----			
63 T	3-nitroaniline		-----	NA-----			
64 T	4-nitroaniline		-----	NA-----			
65	Acenaphthene-d10a	1.000	1.000	0.0	90	0.08	6.78
66	1,1'-Biphenyl	1.400	1.411	-0.8	89	0.07	6.26
67 I	Phenanthrene-d10	1.000	1.000	0.0	104	0.09	8.18
68 T	4,6-Dinitro-2-methylphenol		-----	NA-----			
69 C	n-Nitrosodiphenylamine		-----	NA-----			
70 T	1,2-Diphenylhydrazine		-----	NA-----			
71 S	2,4,6-Tribromophenol		-----	NA-----			
72 T	4-Bromophenyl-phenylether		-----	NA-----			
73 T	Hexachlorobenzene		-----	NA-----			
74 C	Pentachlorophenol		-----	NA-----			
75 T	Phenanthrene		-----	NA-----			
76 T	Anthracene		-----	NA-----			
77 T	Carbazole		-----	NA-----			
78 T	Di-n-butylphthalate		-----	NA-----			
79 C	Fluoranthene		-----	NA-----			
80 I	Phenanthrene-d10a	1.000	1.000	0.0	95	0.09	8.18
81	Atrazine	0.217	0.204	6.0	87	0.09	7.93
82 I	Chrysene-d12	1.000	1.000	0.0	104	0.10	11.16
83 T	Benzidine		-----	NA-----			
84 M	Pyrene		-----	NA-----			
85 S	Terphenyl-d14		-----	NA-----			
86	3,3-Dimethylbenzidine		-----	NA-----			
87 T	Butylbenzylphthalate		-----	NA-----			
88 T	3,3'-Dichlorobenzidine		-----	NA-----			
89 T	Benzo[a]anthracene		-----	NA-----			
90 T	Chrysene		-----	NA-----			

9.7.12  
9

**Continuing Calibration Summary**

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12963.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat		-----NA-----						
92 I	Perylene-d12	1.000	1.000	0.0	108	0.10	12.74		
93 C	Di-n-octylphthalate		-----NA-----						
94 T	Benzo[b]fluoranthene		-----NA-----						
95 T	Benzo[k]fluoranthene		-----NA-----						
96 C	Benzo[a]pyrene		-----NA-----						
97 T	Indeno[1,2,3-cd]pyrene		-----NA-----						
98 T	Dibenz[a,h]anthracene		-----NA-----						
99 T	Benzo[g,h,i]perylene		-----NA-----						

---

(#) = Out of Range  
w12584.D W130530\_8270+.m

SPCC's out = 4 CCC's out = 13  
Wed Jun 19 15:59:07 2013

9.7.12

9

## Continuing Calibration Summary

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12964.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130610\w12964.D Vial: 100  
 Acq On : 10 Jun 2013 5:24 pm Operator: kristinr  
 Sample : cc579-50 Inst : MSW  
 Misc : op33474,msw597,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu Jun 06 09:42:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	97	-0.03	
2	N-nitrosodimethylamine	0.628	0.543	13.5	82	-0.02	
3 T	Pyridine	1.179	1.005	14.8	82	-0.02	
4 T	Aniline	0.559	0.516	7.7	87	-0.03	
5 S	2-Fluorophenol	1.083	1.020	5.8	91	-0.02	
6 T	bis(2-Chloroethyl)ether	0.675	0.560	17.0	79	-0.03	
7 S	Phenol-d5	1.320	1.236	6.4	88	-0.02	
8 C	Phenol	1.408	1.368	2.8	92	-0.02	
9 M	2-Chlorophenol	1.289	1.223	5.1	91	-0.02	
10 T	1,3-Dichlorobenzene	1.484	1.437	3.2	92	-0.03	
11 C	1,4-Dichlorobenzene	1.568	1.506	4.0	93	-0.03	
12 T	1,2-Dichlorobenzene	1.431	1.380	3.6	93	-0.03	
13 T	Benzyl alcohol	0.798	0.557	30.2#	65	-0.03	
14 T	bis(2-chloroisopropyl)eth	0.887	0.715	19.4	77	-0.03	
15 T	o-cresol	1.091	1.063	2.6	91	-0.03	
16 T	Acetophenone	1.718	1.485	13.6	82	-0.03	
17 T	Hexachloroethane	0.493	0.448	9.1	86	-0.03	
18 P	N-Nitroso-di-n-propylamin	0.721	0.603	16.4	77	-0.04	
19 T	m+p-cresols	1.179	1.090	7.5	87	-0.02	
20	4-methylphenol	1.179	1.090	7.5	87	-0.02	
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	77	-0.09	
22	Benzaldehyde			-----NA-----			
23 I	Naphthalene-d8	1.000	1.000	0.0	91	-0.03	
24 S	Nitrobenzene-d5	0.295	0.282	4.4	83	-0.03	
25 T	Nitrobenzene	0.304	0.288	5.3	82	-0.03	
26 T	Isophorone	0.565	0.501	11.3	78	-0.04	
27 C	2-Nitrophenol	0.196	0.200	-2.0	89	-0.03	
28 T	2,4-Dimethylphenol	0.332	0.323	2.7	86	-0.03	
29 T	bis(2-Chloroethoxy)methan	0.356	0.323	9.3	82	-0.03	
30 T	Benzoic acid	50.000	47.148	5.7	84	-0.03	
31 C	2,4-Dichlorophenol	0.345	0.334	3.2	85	-0.03	
32 M	1,2,4-Trichlorobenzene	0.383	0.375	2.1	88	-0.03	
33 T	Naphthalene	1.033	0.995	3.7	87	-0.04	
34 T	2,6-Dichlorophenol	0.342	0.330	3.5	85	-0.03	
35 T	4-Chloroaniline	0.439	0.423	3.6	84	-0.03	
36 C	Hexachlorobutadiene	0.249	0.242	2.8	87	-0.03	

## Continuing Calibration Summary

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12964.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol	0.295	0.277	6.1	82	-0.03	5.73
38 T	2-Methylnaphthalene	0.768	0.764	0.5	88	-0.03	5.85
39 T	1-Methylnaphthalene	0.737	0.708	3.9	86	-0.03	5.94
40 T	1,2,4,5-Tetrachlorobenzene	0.475	0.450	5.3	85	-0.03	6.03
41 I	Naphthalene-d8a	1.000	1.000	0.0	70	-0.09	5.24
42	Caprolactam			-----NA-----			
43 I	Acenaphthene-d10	1.000	1.000	0.0	88	-0.04	6.77
44 T	Pentachloronitrobenzene	0.185	0.171	7.6	77	-0.04	8.13
45 P	Hexachlorocyclopentadiene	0.411	0.386	6.1	77	-0.03	6.04
46 C	2,4,6-Trichlorophenol	0.436	0.415	4.8	81	-0.03	6.11
47 T	2,4,5-Trichlorophenol	0.464	0.445	4.1	81	-0.03	6.15
48 S	2-Fluorobiphenyl	1.373	1.365	0.6	86	-0.04	6.18
49 T	2-Chloronaphthalene	1.097	1.071	2.4	84	-0.04	6.27
50 M	Acenaphthylene	1.794	1.782	0.7	84	-0.04	6.64
51 T	Dimethylphthalate	1.348	1.298	3.7	82	-0.04	6.56
52 T	2,4-Dinitrotoluene	0.394	0.393	0.3	83	-0.04	6.97
53 C	Acenaphthene	1.113	1.102	1.0	85	-0.04	6.80
54 P	2,4-Dinitrophenol	0.230	0.175	23.9#	66	-0.03	6.84
55 T	Dibenzofuran	1.720	1.697	1.3	84	-0.04	6.95
56 M	2,6-Dinitrotoluene	0.299	0.305	-2.0	85	-0.04	6.63
57 P	4-Nitrophenol	0.183	0.155	15.3	70	-0.02	6.90
58 T	2,3,4,6-Tetrachlorophenol	0.463	0.439	5.2	79	-0.04	7.10
59 T	Fluorene	1.357	1.327	2.2	83	-0.05	7.26
60 T	4-Chlorophenyl-phenylethane	0.766	0.743	3.0	81	-0.04	7.26
61 T	Diethylphthalate	1.221	1.138	6.8	79	-0.05	7.20
62 T	2-nitroaniline	0.331	0.350	-5.7	89	-0.03	6.39
63 T	3-nitroaniline	0.294	0.298	-1.4	85	-0.04	6.75
64 T	4-nitroaniline	0.295	0.302	-2.4	85	-0.04	7.32
65	Acenaphthene-d10a	1.000	1.000	0.0	73	-0.09	6.77
66	1,1'-Biphenyl			-----NA-----			
67 I	Phenanthrene-d10	1.000	1.000	0.0	84	-0.05	8.18
68 T	4,6-Dinitro-2-methylphenol	0.159	0.139	12.6	71	-0.04	7.35
69 C	n-Nitrosodiphenylamine	0.524	0.517	1.3	82	-0.05	7.37
70 T	1,2-Diphenylhydrazine	0.481	0.427	11.2	75	-0.05	7.41
71 S	2,4,6-Tribromophenol	0.161	0.173	-7.5	89	-0.04	7.51
72 T	4-Bromophenyl-phenylether	0.275	0.281	-2.2	83	-0.04	7.72
73 T	Hexachlorobenzene	0.301	0.315	-4.7	86	-0.05	7.87
74 C	Pentachlorophenol	0.218	0.201	7.8	76	-0.04	8.05
75 T	Phenanthrene	1.083	1.062	1.9	81	-0.05	8.20
76 T	Anthracene	1.131	1.123	0.7	80	-0.05	8.24
77 T	Carbazole	0.969	0.964	0.5	80	-0.05	8.42
78 T	Di-n-butylphthalate	1.095	1.053	3.8	78	-0.05	8.84
79 C	Fluoranthene	1.267	1.264	0.2	81	-0.05	9.48
80 I	Phenanthrene-d10a	1.000	1.000	0.0	77	-0.09	8.18
81	Atrazine			-----NA-----			
82 I	Chrysene-d12	1.000	1.000	0.0	85	-0.06	11.15
83 T	Benzidine	0.264	0.369	-39.8#	111	-0.05	9.64
84 M	Pyrene	1.061	1.034	2.5	80	-0.05	9.74
85 S	Terphenyl-d14	0.922	0.910	1.3	81	-0.06	9.93
86	3,3-Dimethylbenzidine	0.394	0.515	-30.7#	99	-0.06	10.49
87 T	Butylbenzylphthalate	0.319	0.355	-11.3	89	-0.05	10.55
88 T	3,3'-Dichlorobenzidine	0.406	0.441	-8.6	84	-0.06	11.12
89 T	Benzo[a]anthracene	1.057	1.029	2.6	80	-0.05	11.13
90 T	Chrysene	1.033	0.991	4.1	80	-0.05	11.18

9.7.13  
9

**Continuing Calibration Summary**

Job Number: JB38711

Sample: MSW597-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12964.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	0.489	0.533	-9.0	87	-0.06	11.26
92 I	Perylene-d12	1.000	1.000	0.0	88	-0.06	12.74
93 C	Di-n-octylphthalate	0.753	0.842	-11.8	91	-0.06	11.96
94 T	Benzo[b]fluoranthene	1.199	1.105	7.8	82	-0.06	12.35
95 T	Benzo[k]fluoranthene	1.183	1.182	0.1	83	-0.06	12.37
96 C	Benzo[a]pyrene	1.059	1.037	2.1	81	-0.06	12.68
97 T	Indeno[1,2,3-cd]pyrene	1.364	1.368	-0.3	84	-0.08	13.91
98 T	Dibenz[a,h]anthracene	1.126	1.141	-1.3	84	-0.08	13.92
99 T	Benzo[g,h,i]perylene	1.139	1.115	2.1	84	-0.08	14.23

(#) = Out of Range  
w12584.D W130530\_8270+.m

SPCC's out = 0 CCC's out = 0  
Fri Jun 14 16:40:24 2013

9.7.13

9



## GC/MS Semi-volatiles

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### Raw Data

(Accutest Labs of New England, Inc.)

---

## Quantitation Report (QT Reviewed)

Manual Integrations  
APPROVED  
(compounds with "m" flag)

Doug Yargeau  
06/19/13 16:30

Data Path : C:\msdchem\2\DATA\W130610\  
Data File : w12987.D  
Acq On : 11 Jun 2013 2:53 am  
Operator : kristinr  
Sample : jb38711-1  
Misc : op33547,msw597,20.39,,,1,1  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jun 19 15:51:03 2013  
Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
Quant Title : SW-864 Method 8270  
QLast Update : Thu Jun 06 09:42:09 2013  
Response via : Initial Calibration

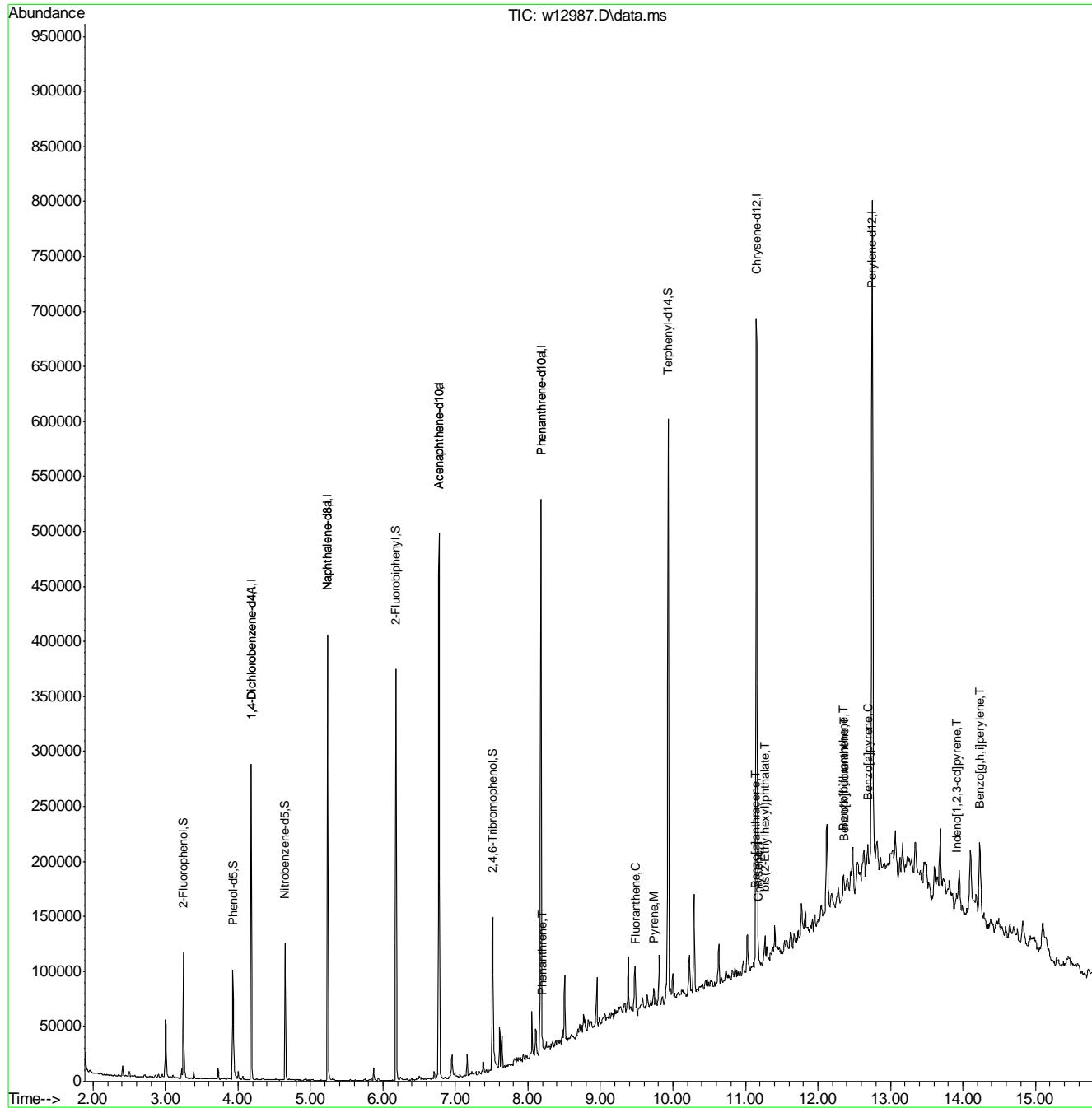
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.184	152	47472	40.00	ppm	0.08
21) 1,4-Dichlorobenzene-d4A	4.184	152	47472	40.00	PPM	0.08
23) Naphthalene-d8	5.237	136	169460	40.00	ppm	0.07
41) Naphthalene-d8a	5.237	136	169460	40.00	ppm	0.07
43) Acenaphthene-d10	6.775	164	113562	40.00	ppm	0.08
65) Acenaphthene-d10a	6.775	164	113562	40.00	ppm	0.08
67) Phenanthrene-d10	8.180	188	210287	40.00	ppm	0.09
80) Phenanthrene-d10a	8.180	188	210287	40.00	ppm	0.09
82) Chrysene-d12	11.151	240	266559	40.00	ppm	0.09
92) Perylene-d12	12.748	264	277775	40.00	ppm	0.10
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.244	112	35789	27.84	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.84%#			
7) Phenol-d5	3.928	99	42817	27.33	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.33%#			
24) Nitrobenzene-d5	4.649	82	33619	26.87	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 53.74%			
48) 2-Fluorobiphenyl	6.177	172	124681	31.99	ppm	0.07
Spiked Amount 50.000	Range 30 - 130		Recovery = 63.98%			
71) 2,4,6-Tribromophenol	7.513	330	32673	38.53	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 38.53%			
85) Terphenyl-d14	9.933	244	221136	35.99	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 71.98%			
<hr/>						
Target Compounds				Qvalue		
75) Phenanthrene	8.202	178	4095	0.72	ppm	95
79) Fluoranthene	9.484	202	6344	0.95	ppm	93
84) Pyrene	9.735	202	6826	0.97	ppm	88
89) Benzo[a]anthracene	11.135	228	4191	0.59	ppm	92
90) Chrysene	11.177	228	6818	0.99	ppm	91
91) bis(2-Ethylhexyl)phtha...	11.268	149	8314	2.55	ppm	86
94) Benzo[b]fluoranthene	12.353	252	6277m	0.75	ppm	
95) Benzo[k]fluoranthene	12.369	252	3879m	0.47	ppm	
96) Benzo[a]pyrene	12.689	252	5445	0.74	ppm	87
97) Indeno[1,2,3-cd]pyrene	13.918	276	8494	0.90	ppm	71
99) Benzo[g,h,i]perylene	14.239	276	29961	3.79	ppm	91
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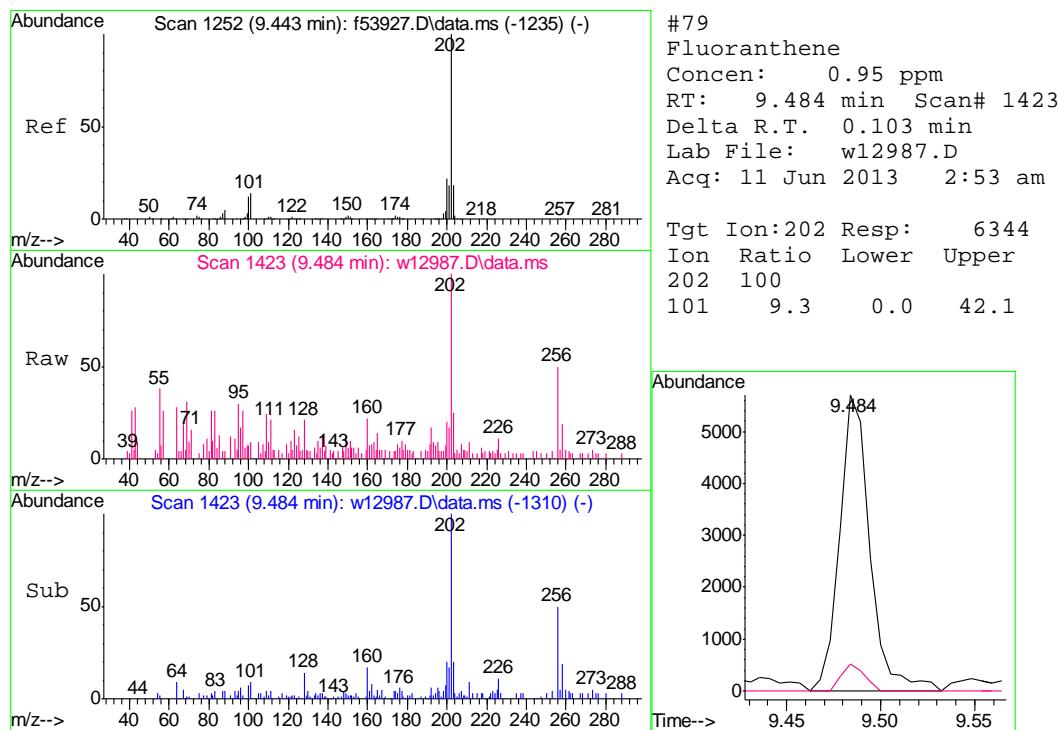
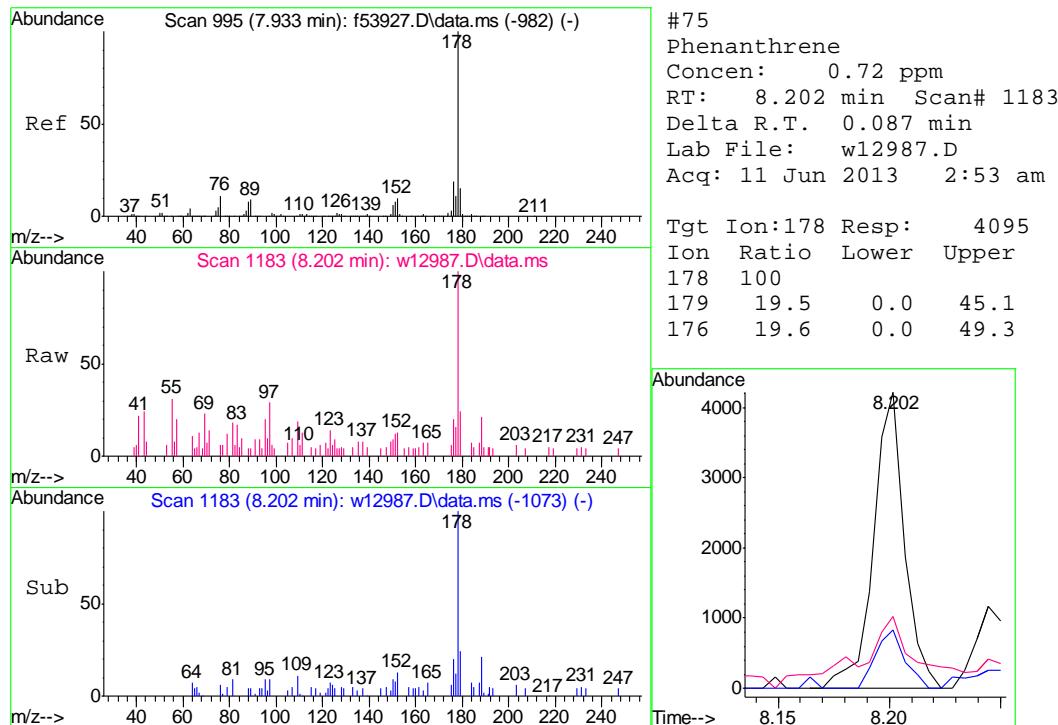
(#) = qualifier out of range (m) = manual integration (+) = signals summed

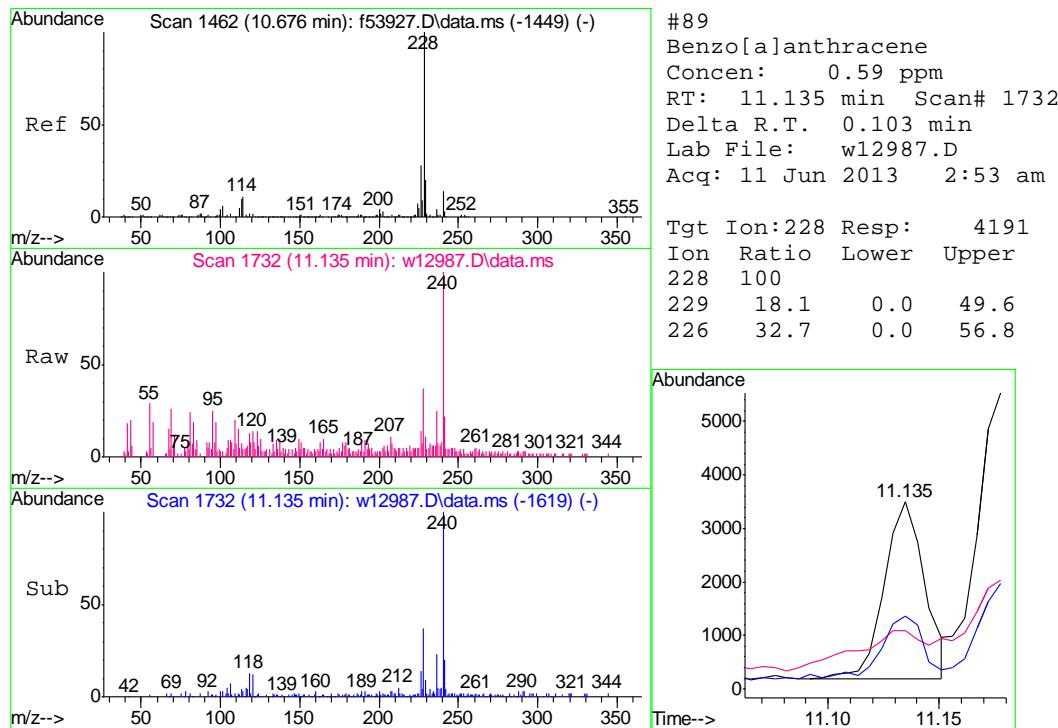
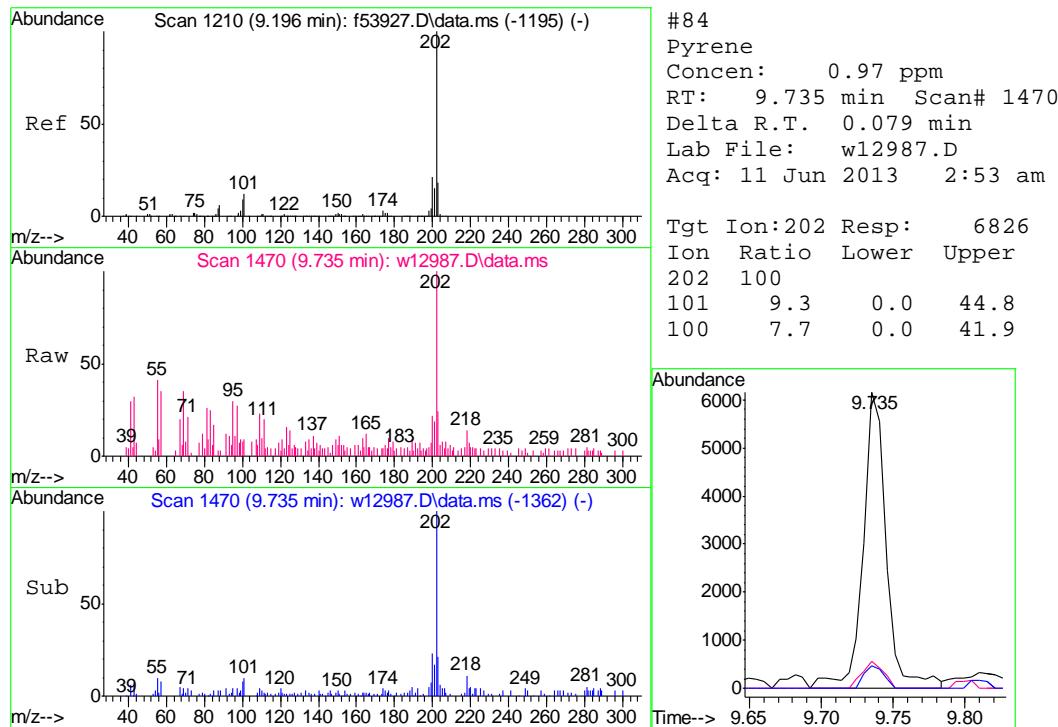
## Quantitation Report (QT Reviewed)

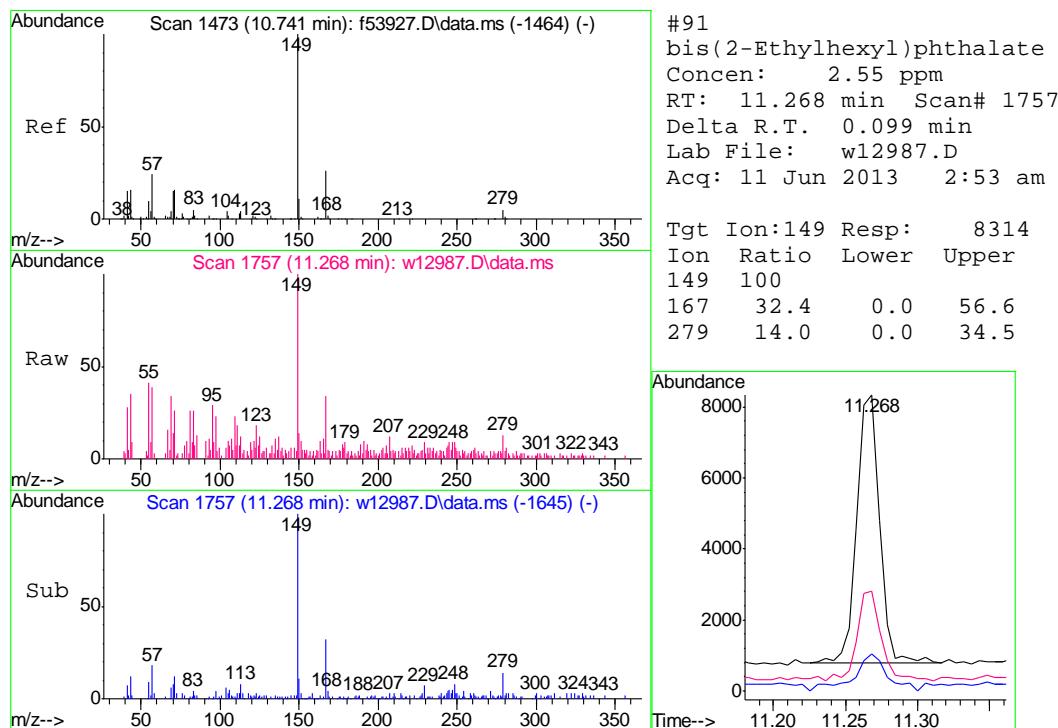
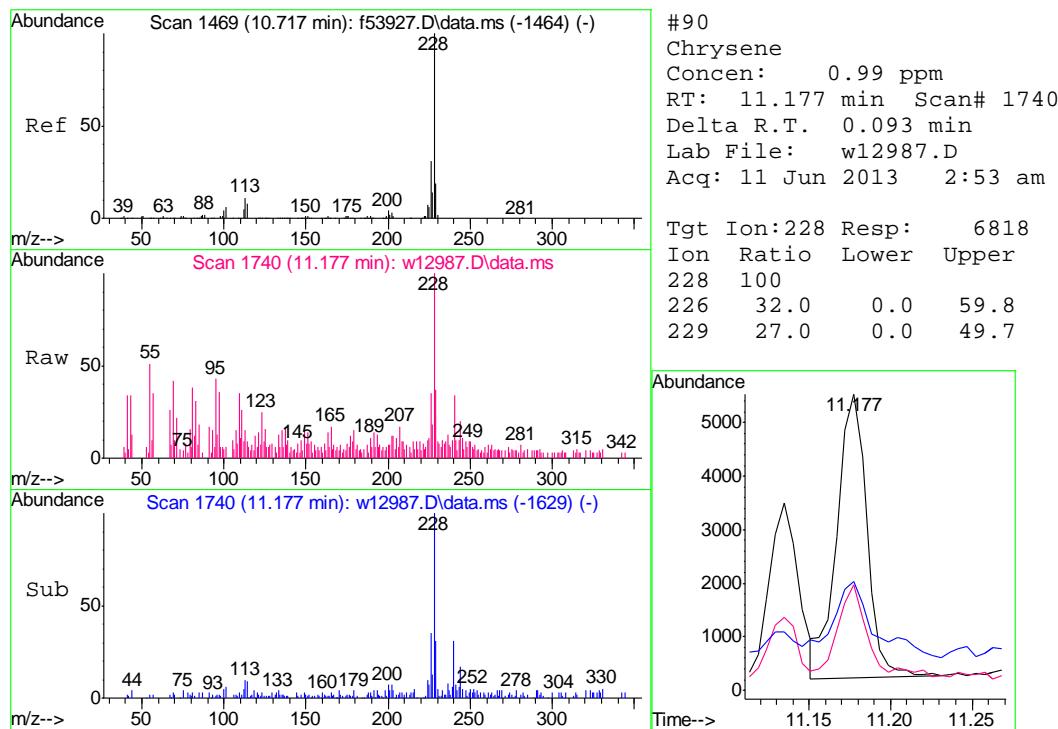
Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12987.D  
 Acq On : 11 Jun 2013 2:53 am  
 Operator : kristinr  
 Sample : jb38711-1  
 Misc : op33547,msw597,20.39,,,1,1  
 ALS Vial : 24 Sample Multiplier: 1

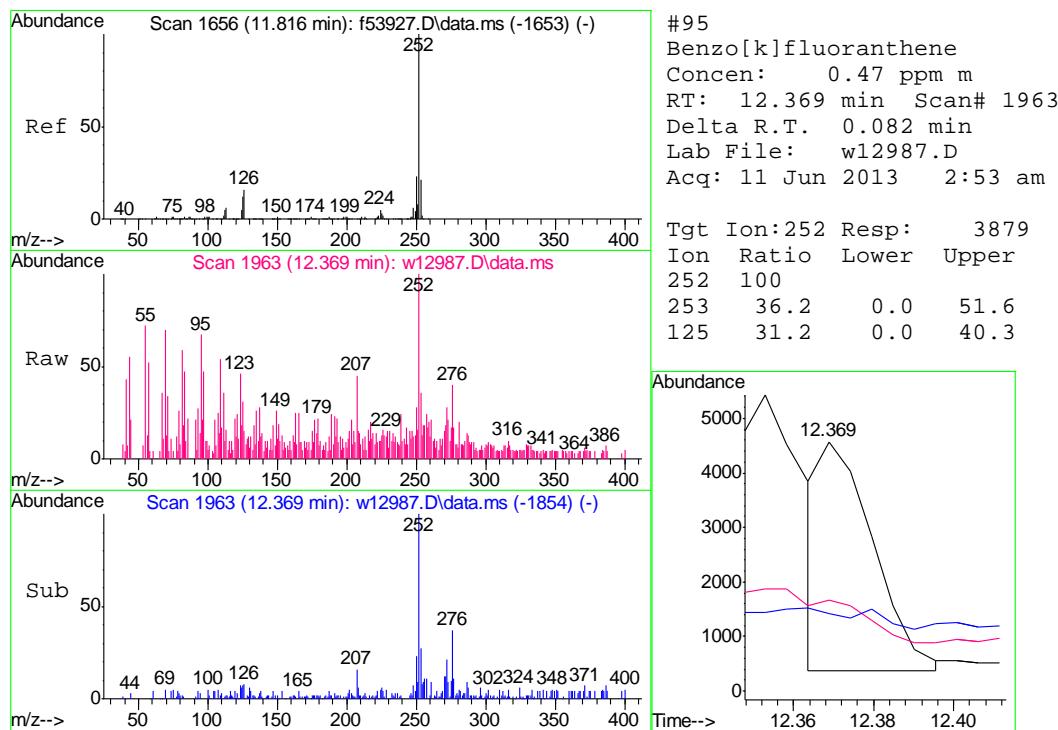
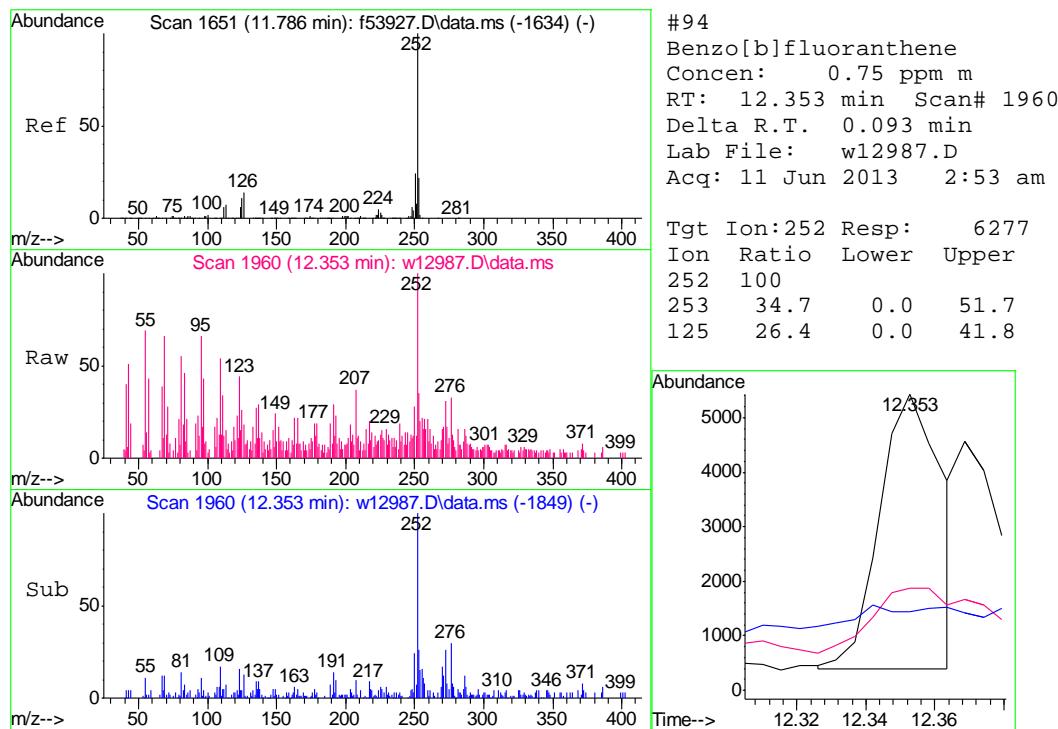
Quant Time: Jun 19 15:51:03 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

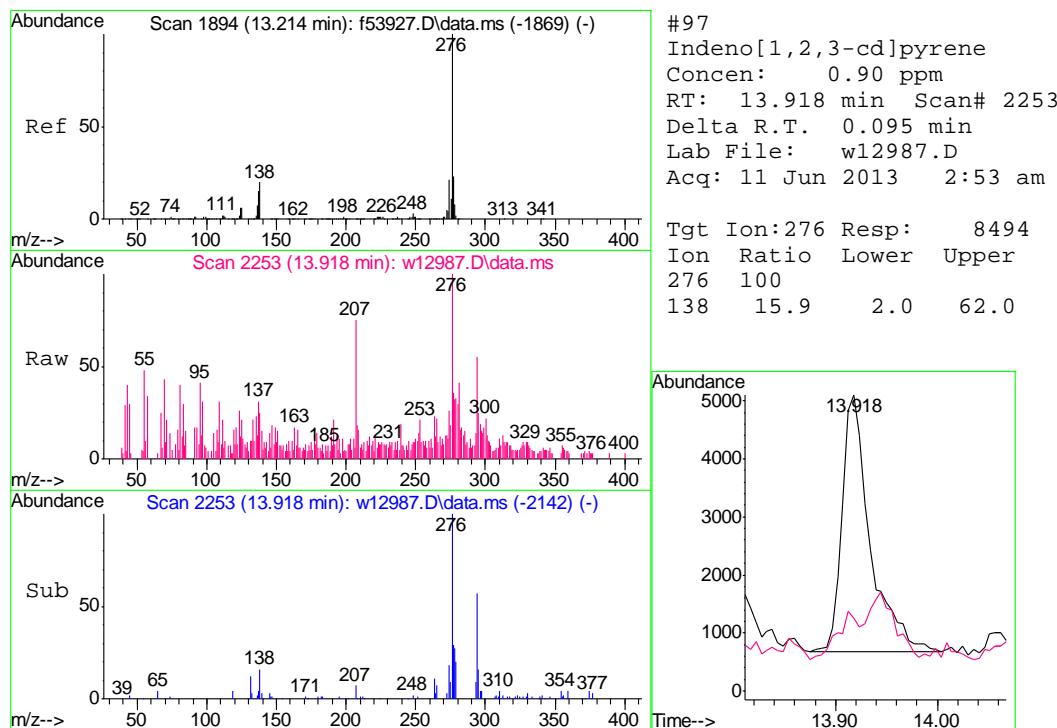
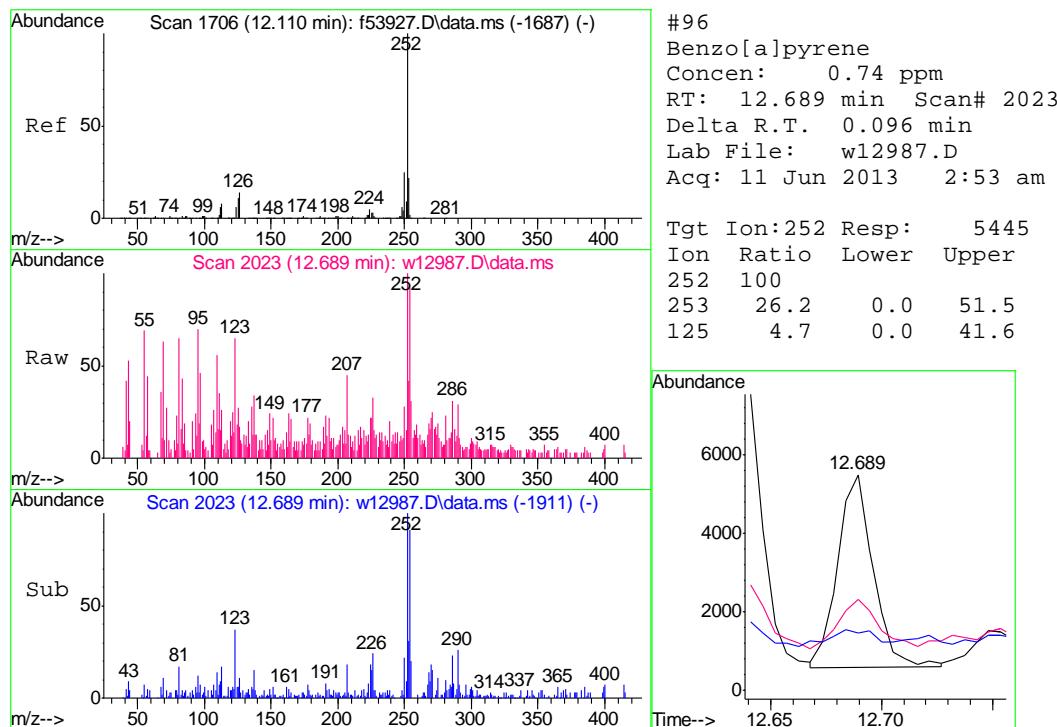


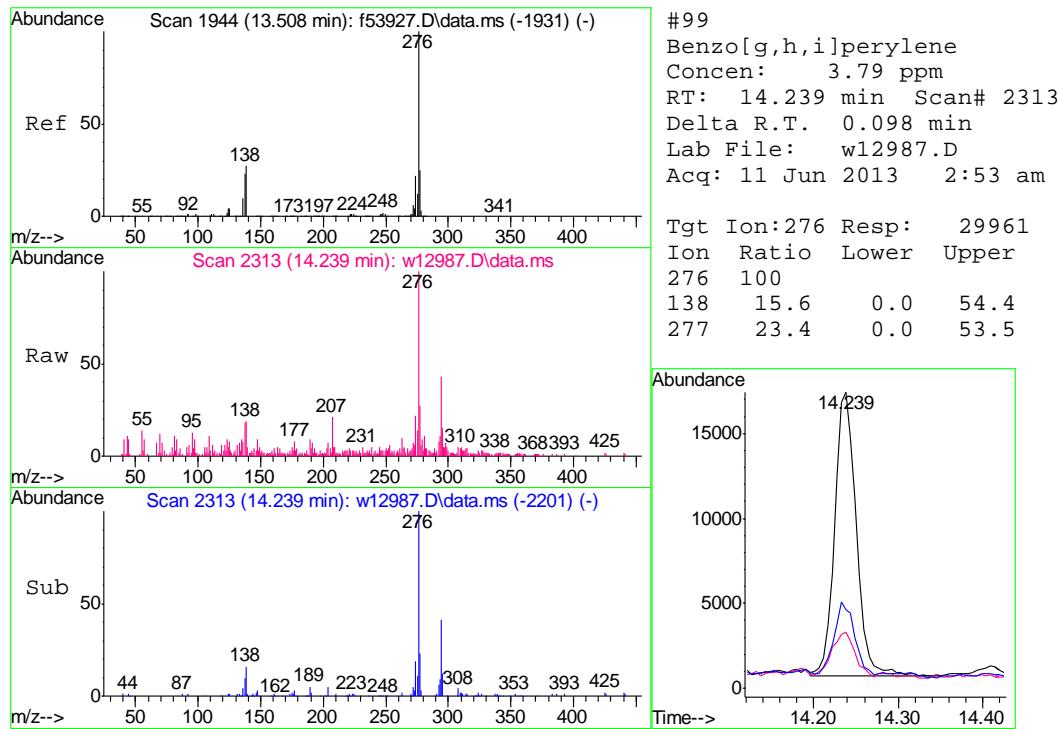












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12988.D  
 Acq On : 11 Jun 2013 3:18 am  
 Operator : kristinr  
 Sample : jb38711-2  
 Misc : op33547,msw597,20.24,,,1,1  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jun 19 15:52:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.184	152	48445	40.00	ppm	0.08
21) 1,4-Dichlorobenzene-d4A	4.184	152	48445	40.00	PPM	0.08
23) Naphthalene-d8	5.237	136	173315	40.00	ppm	0.07
41) Naphthalene-d8a	5.237	136	173315	40.00	ppm	0.07
43) Acenaphthene-d10	6.775	164	114706	40.00	ppm	0.08
65) Acenaphthene-d10a	6.775	164	114706	40.00	ppm	0.08
67) Phenanthrene-d10	8.180	188	210680	40.00	ppm	0.09
80) Phenanthrene-d10a	8.180	188	210680	40.00	ppm	0.09
82) Chrysene-d12	11.151	240	256389	40.00	ppm	0.09
92) Perylene-d12	12.748	264	264870	40.00	ppm	0.10
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.250	112	43874	33.45	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 33.45%			
7) Phenol-d5	3.928	99	48567	30.38	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 30.38%			
24) Nitrobenzene-d5	4.649	82	41476	32.41	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 64.82%			
48) 2-Fluorobiphenyl	6.182	172	140482	35.68	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 71.36%			
71) 2,4,6-Tribromophenol	7.513	330	30986	36.47	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 36.47%			
85) Terphenyl-d14	9.933	244	229808	38.89	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 77.78%			

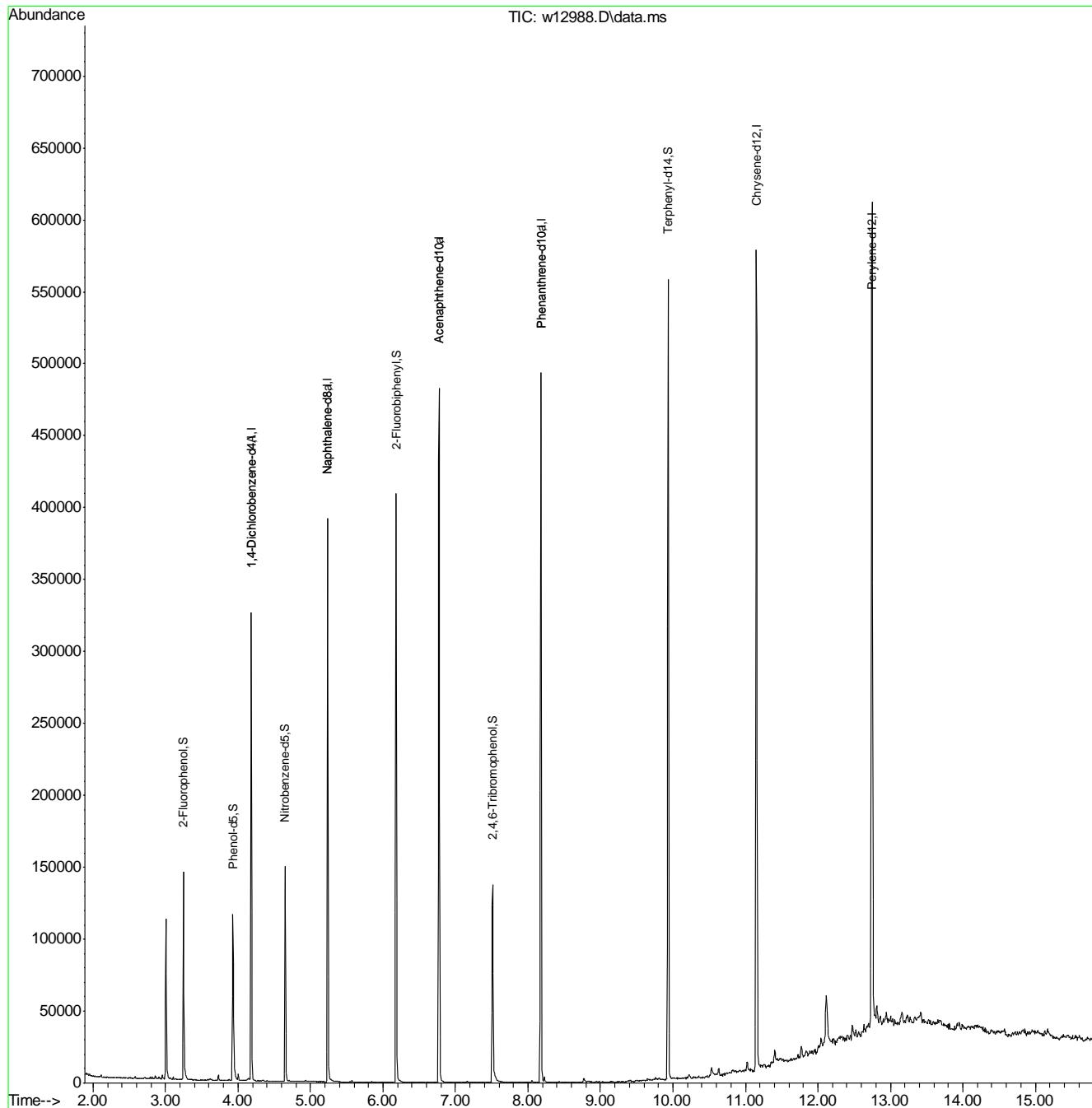
Target Compounds	Qvalue
<hr/>	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12988.D  
 Acq On : 11 Jun 2013 3:18 am  
 Operator : kristinr  
 Sample : jb38711-2  
 Misc : op33547,msw597,20.24,,,1,1  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jun 19 15:52:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12989.D  
 Acq On : 11 Jun 2013 3:44 am  
 Operator : kristinr  
 Sample : jb38711-3  
 Misc : op33547,msw597,20.39,,,1,1  
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Jun 19 15:53:12 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

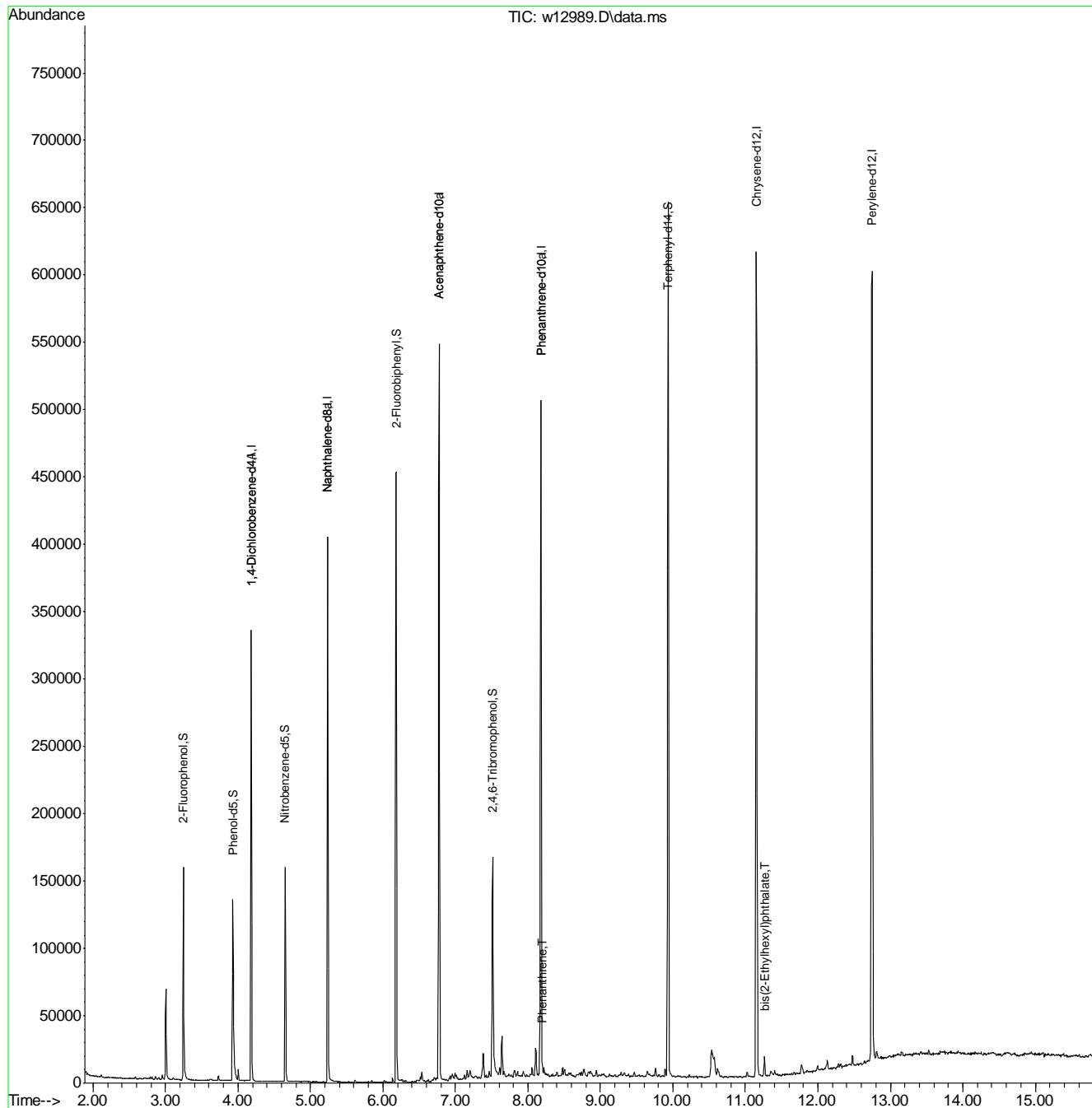
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.185	152	50826	40.00	ppm	0.08
21) 1,4-Dichlorobenzene-d4A	4.185	152	50826	40.00	PPM	0.08
23) Naphthalene-d8	5.237	136	180875	40.00	ppm	0.07
41) Naphthalene-d8a	5.237	136	180875	40.00	ppm	0.07
43) Acenaphthene-d10	6.776	164	120509	40.00	ppm	0.08
65) Acenaphthene-d10a	6.776	164	120509	40.00	ppm	0.08
67) Phenanthrene-d10	8.181	188	220010	40.00	ppm	0.09
80) Phenanthrene-d10a	8.181	188	220010	40.00	ppm	0.09
82) Chrysene-d12	11.151	240	271340	40.00	ppm	0.09
92) Perylene-d12	12.748	264	282421	40.00	ppm	0.10
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.244	112	49446	35.93	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 35.93%			
7) Phenol-d5	3.928	99	56674	33.79	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 33.79%			
24) Nitrobenzene-d5	4.649	82	46803	35.04	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 70.08%			
48) 2-Fluorobiphenyl	6.183	172	158980	38.43	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 76.86%			
71) 2,4,6-Tribromophenol	7.513	330	36222	40.82	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 40.82%			
85) Terphenyl-d14	9.933	244	266454	42.60	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 85.20%			
<hr/>						
Target Compounds				Qvalue		
75) Phenanthrene	8.202	178	1469	0.25	ppm	98
91) bis(2-Ethylhexyl)phtha...	11.263	149	5332	1.61	ppm	87

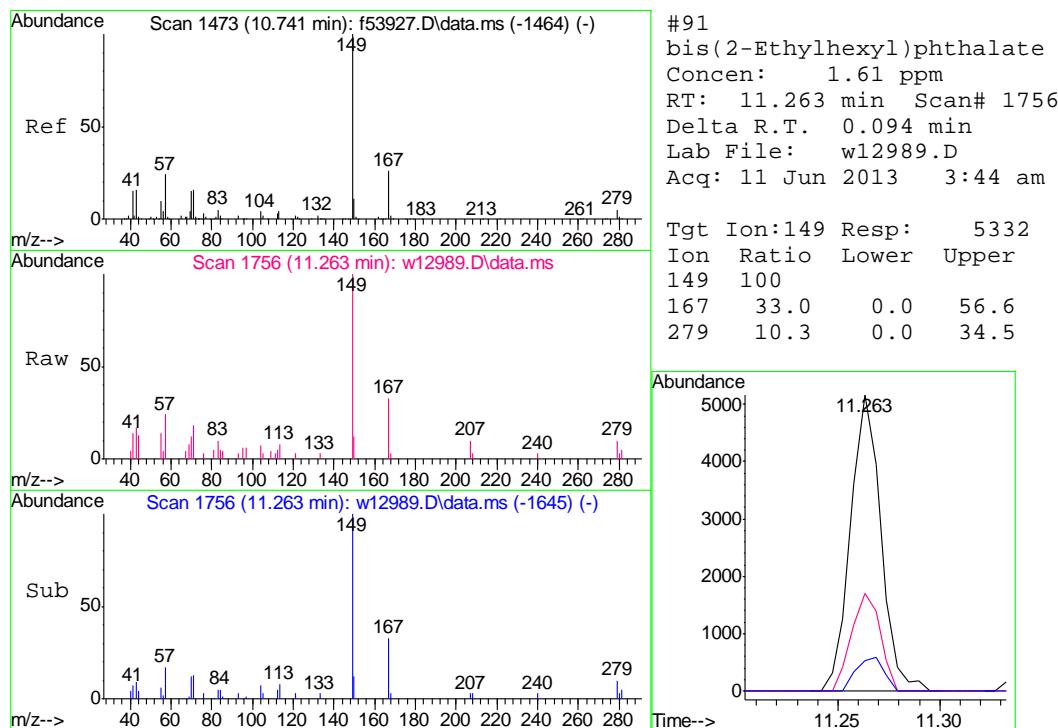
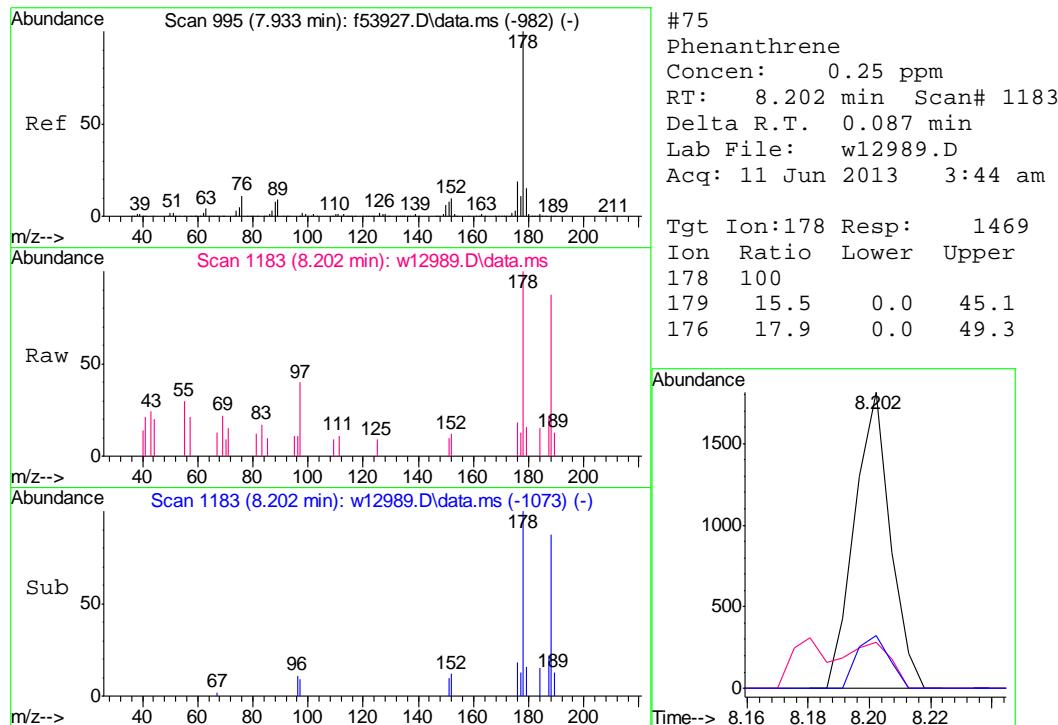
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12989.D  
 Acq On : 11 Jun 2013 3:44 am  
 Operator : kristinr  
 Sample : jb38711-3  
 Misc : op33547,msw597,20.39,,,1,1  
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Jun 19 15:53:12 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12990.D  
 Acq On : 11 Jun 2013 4:09 am  
 Operator : kristinr  
 Sample : jb38711-4  
 Misc : op33547,msw597,20.29,,,1,1  
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Jun 19 15:54:00 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

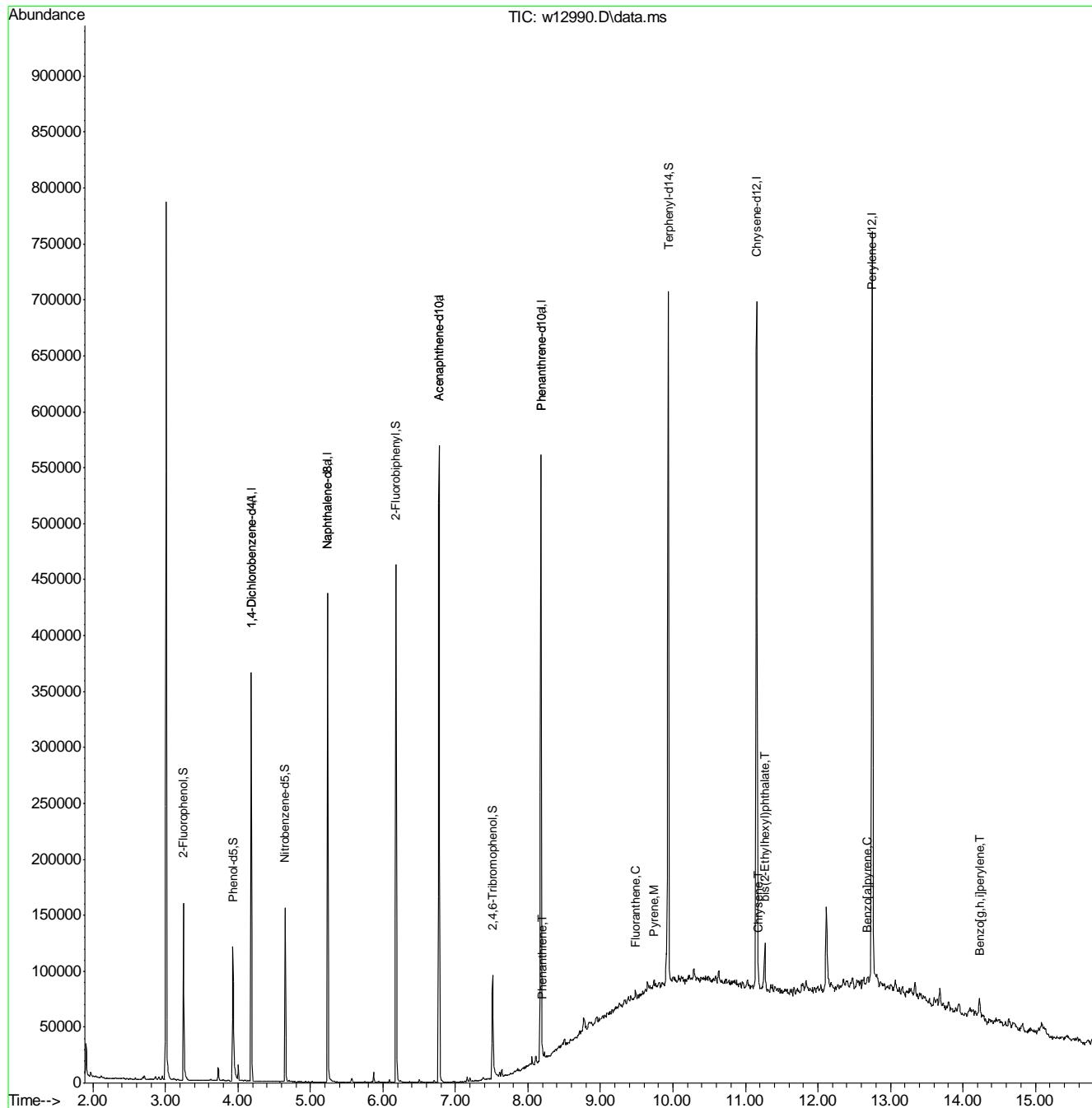
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.185	152	55411	40.00	ppm	0.08
21) 1,4-Dichlorobenzene-d4A	4.185	152	55411	40.00	PPM	0.08
23) Naphthalene-d8	5.237	136	198619	40.00	ppm	0.07
41) Naphthalene-d8a	5.237	136	198619	40.00	ppm	0.07
43) Acenaphthene-d10	6.776	164	132840	40.00	ppm	0.08
65) Acenaphthene-d10a	6.776	164	132840	40.00	ppm	0.08
67) Phenanthrene-d10	8.181	188	235698	40.00	ppm	0.09
80) Phenanthrene-d10a	8.181	188	235698	40.00	ppm	0.09
82) Chrysene-d12	11.156	240	287795	40.00	ppm	0.10
92) Perylene-d12	12.748	264	298827	40.00	ppm	0.10
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.250	112	46283	30.85	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 30.85%			
7) Phenol-d5	3.928	99	54046	29.56	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 29.56%#			
24) Nitrobenzene-d5	4.649	82	46152	31.47	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 62.94%			
48) 2-Fluorobiphenyl	6.177	172	156269	34.27	ppm	0.07
Spiked Amount 50.000	Range 30 - 130		Recovery = 68.54%			
71) 2,4,6-Tribromophenol	7.513	330	22615	23.79	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 23.79%#			
85) Terphenyl-d14	9.938	244	271006	40.85	ppm	0.09
Spiked Amount 50.000	Range 30 - 130		Recovery = 81.70%			
<hr/>						
Target Compounds				Qvalue		
75) Phenanthrene	8.197	178	2002	0.31	ppm	93
79) Fluoranthene	9.489	202	3813	0.51	ppm	92
84) Pyrene	9.735	202	3667	0.48	ppm	93
90) Chrysene	11.178	228	2740	0.37	ppm	91
91) bis(2-Ethylhexyl)phtha...	11.263	149	15105	4.30	ppm	86
96) Benzo[a]pyrene	12.684	252	1783	0.23	ppm	93
99) Benzo[g,h,i]perylene	14.233	276	8891	1.05	ppm	88
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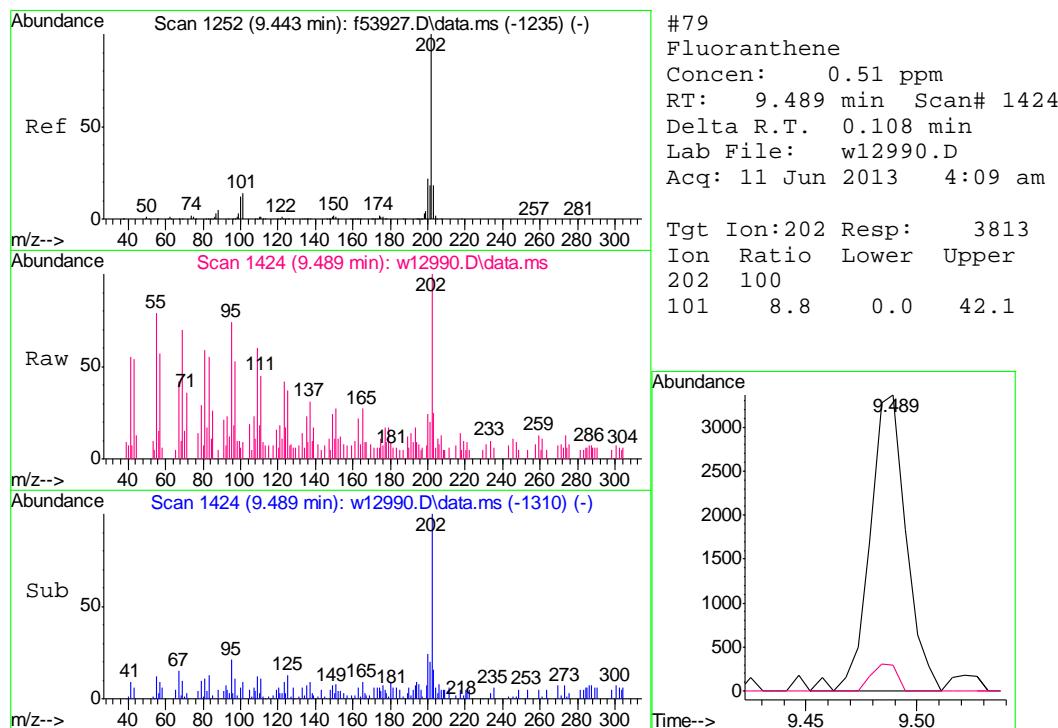
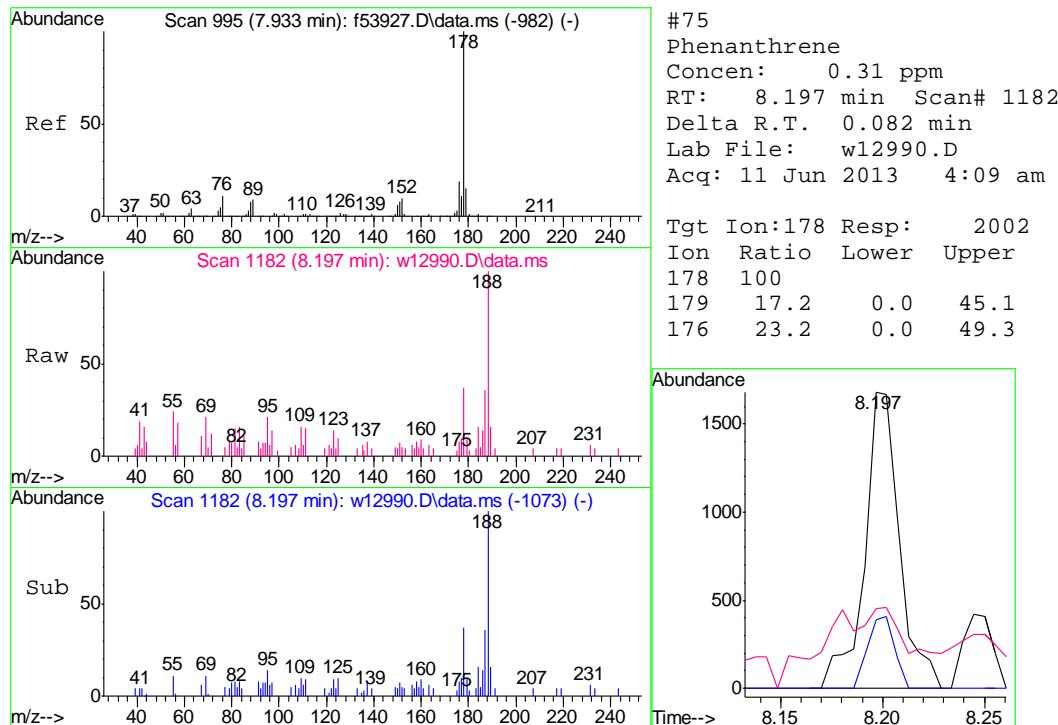
(#) = qualifier out of range (m) = manual integration (+) = signals summed

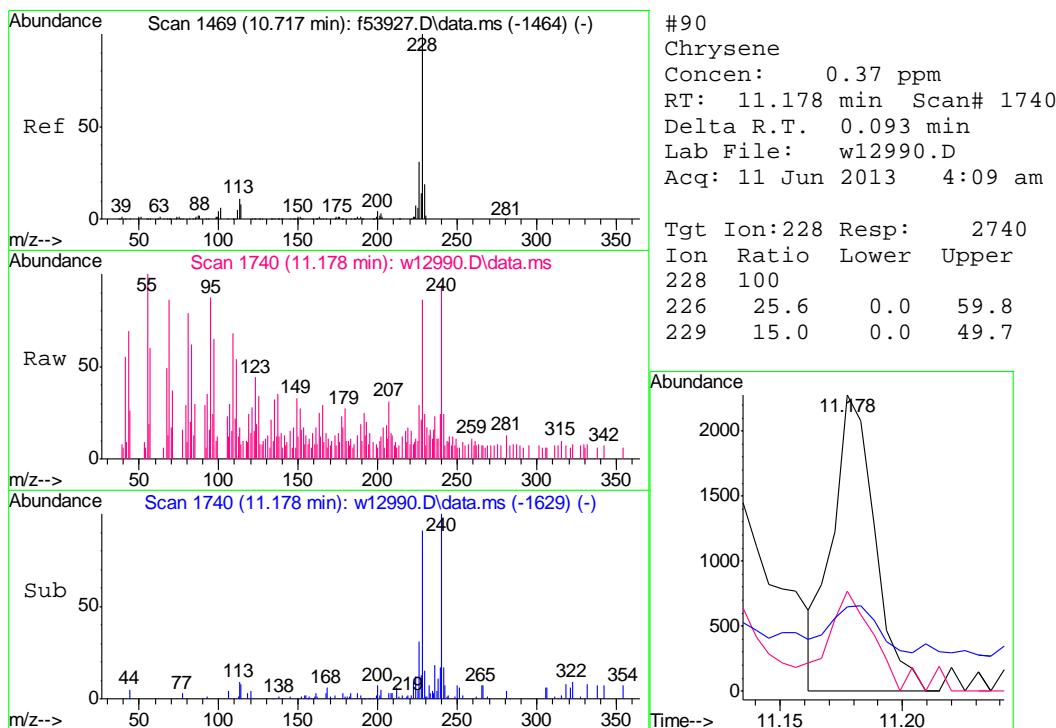
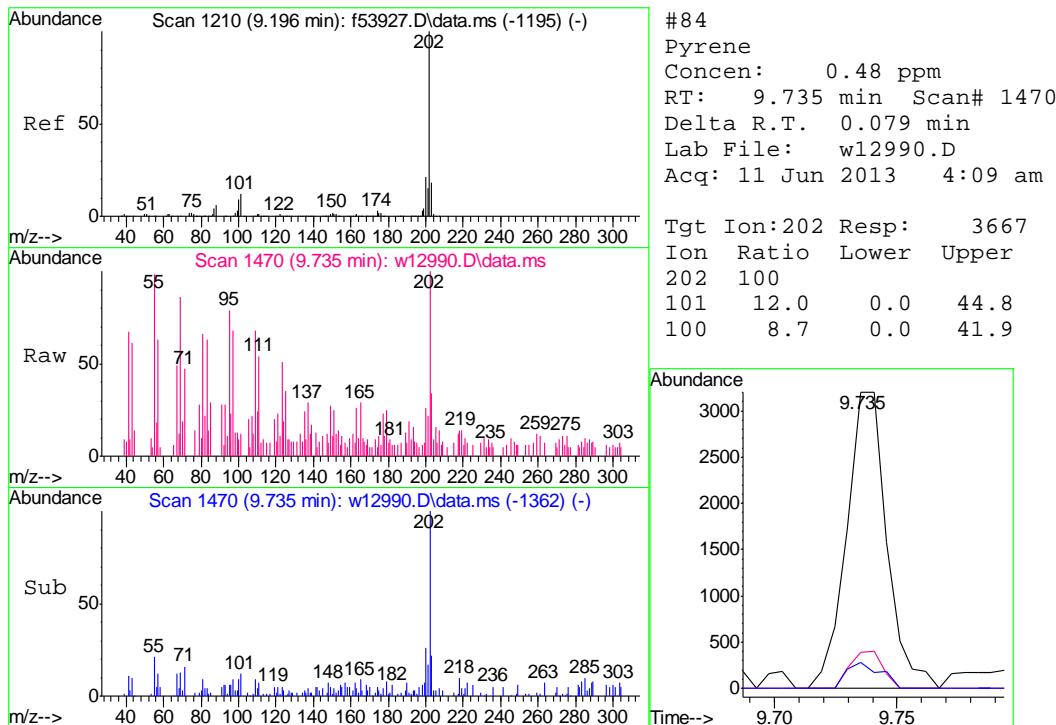
## Quantitation Report (QT Reviewed)

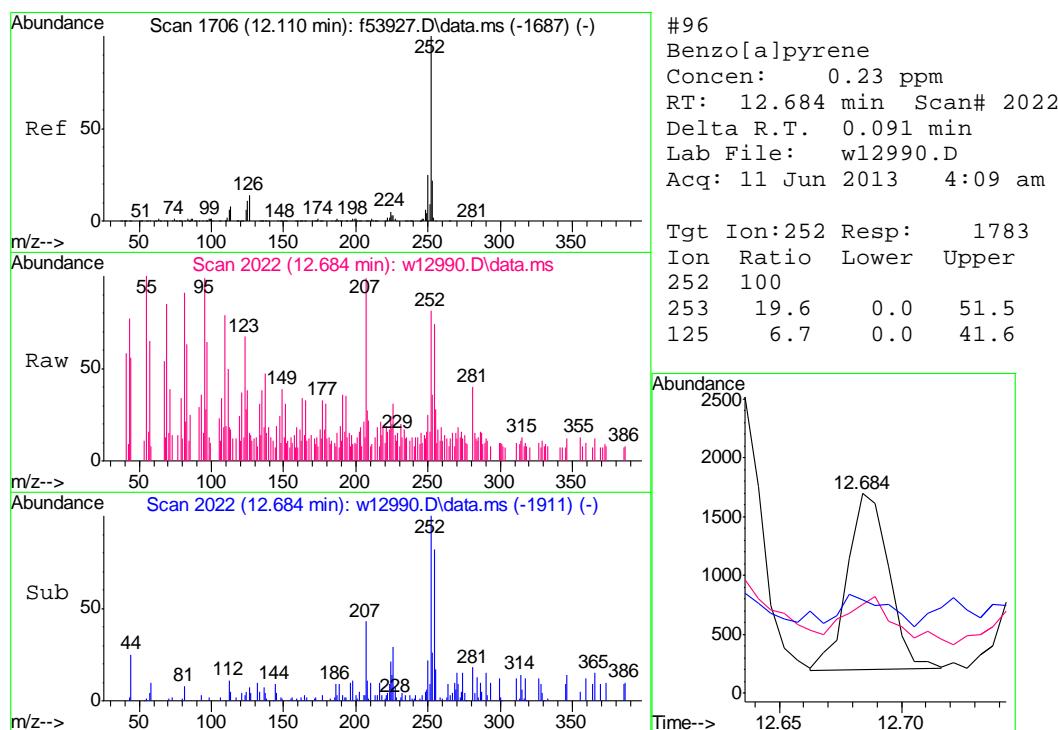
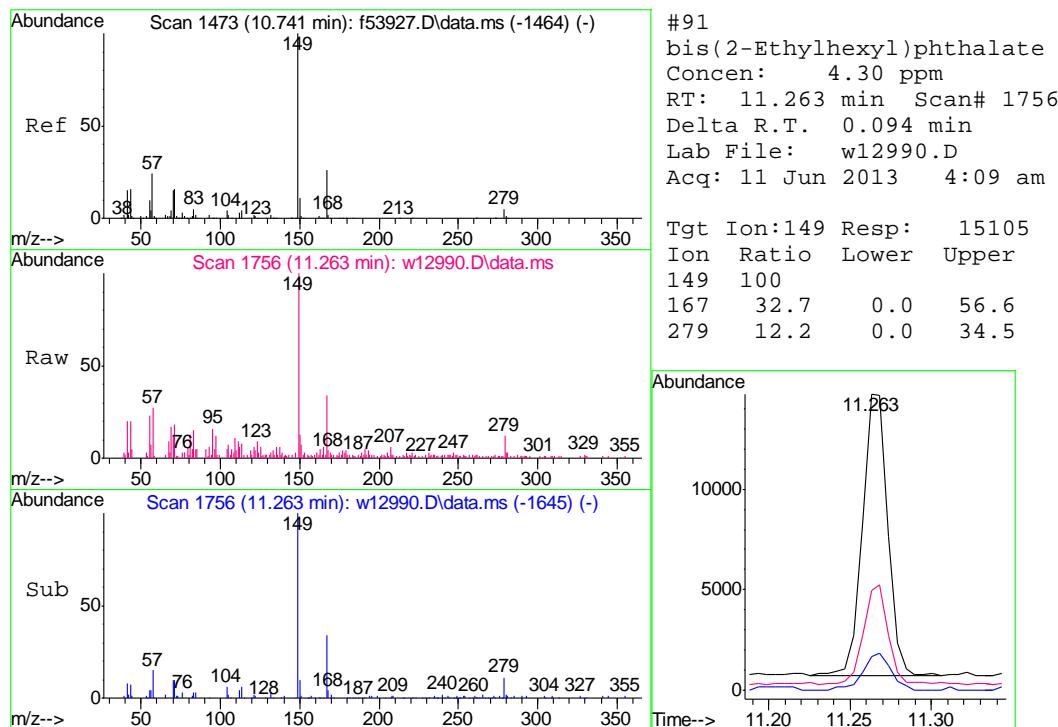
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 Data File : w12990.D  
 Acq On : 11 Jun 2013 4:09 am  
 Operator : kristinr  
 Sample : jb38711-4  
 Misc : op33547,msw597,20.29,,,1,1  
 ALS Vial : 27 Sample Multiplier: 1

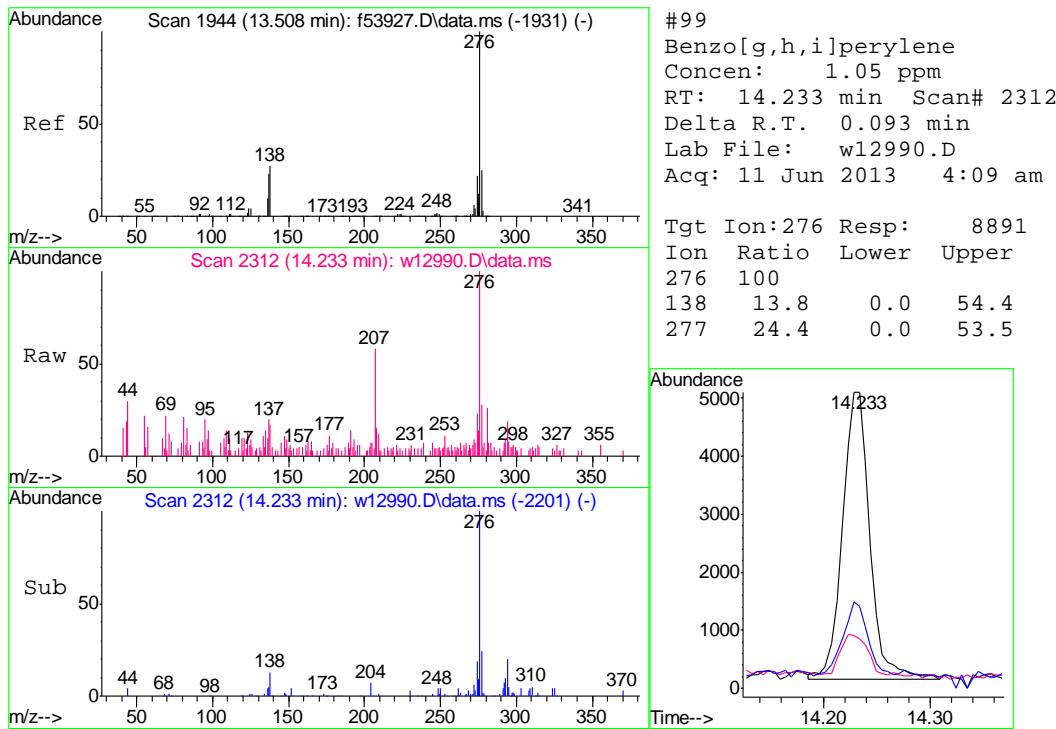
Quant Time: Jun 19 15:54:00 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration











## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12991.D  
 Acq On : 11 Jun 2013 4:34 am  
 Operator : kristinr  
 Sample : jb38711-5  
 Misc : op33547,msw597,20.68,,,1,1  
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Jun 19 15:54:34 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.184	152	51806	40.00	ppm	0.08
21) 1,4-Dichlorobenzene-d4A	4.184	152	51806	40.00	PPM	0.08
23) Naphthalene-d8	5.237	136	184119	40.00	ppm	0.07
41) Naphthalene-d8a	5.237	136	184119	40.00	ppm	0.07
43) Acenaphthene-d10	6.775	164	122760	40.00	ppm	0.08
65) Acenaphthene-d10a	6.775	164	122760	40.00	ppm	0.08
67) Phenanthrene-d10	8.180	188	225219	40.00	ppm	0.09
80) Phenanthrene-d10a	8.180	188	225219	40.00	ppm	0.09
82) Chrysene-d12	11.151	240	278832	40.00	ppm	0.09
92) Perylene-d12	12.748	264	287753	40.00	ppm	0.10
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.250	112	41303	29.44	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 29.44%#			
7) Phenol-d5	3.928	99	47155	27.58	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.58%#			
24) Nitrobenzene-d5	4.649	82	40216	29.58	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 59.16%			
48) 2-Fluorobiphenyl	6.177	172	136343	32.36	ppm	0.07
Spiked Amount 50.000	Range 30 - 130		Recovery = 64.72%			
71) 2,4,6-Tribromophenol	7.513	330	30274	33.33	ppm	0.08
Spiked Amount 100.000	Range 30 - 130		Recovery = 33.33%			
85) Terphenyl-d14	9.933	244	231040	35.95	ppm	0.08
Spiked Amount 50.000	Range 30 - 130		Recovery = 71.90%			

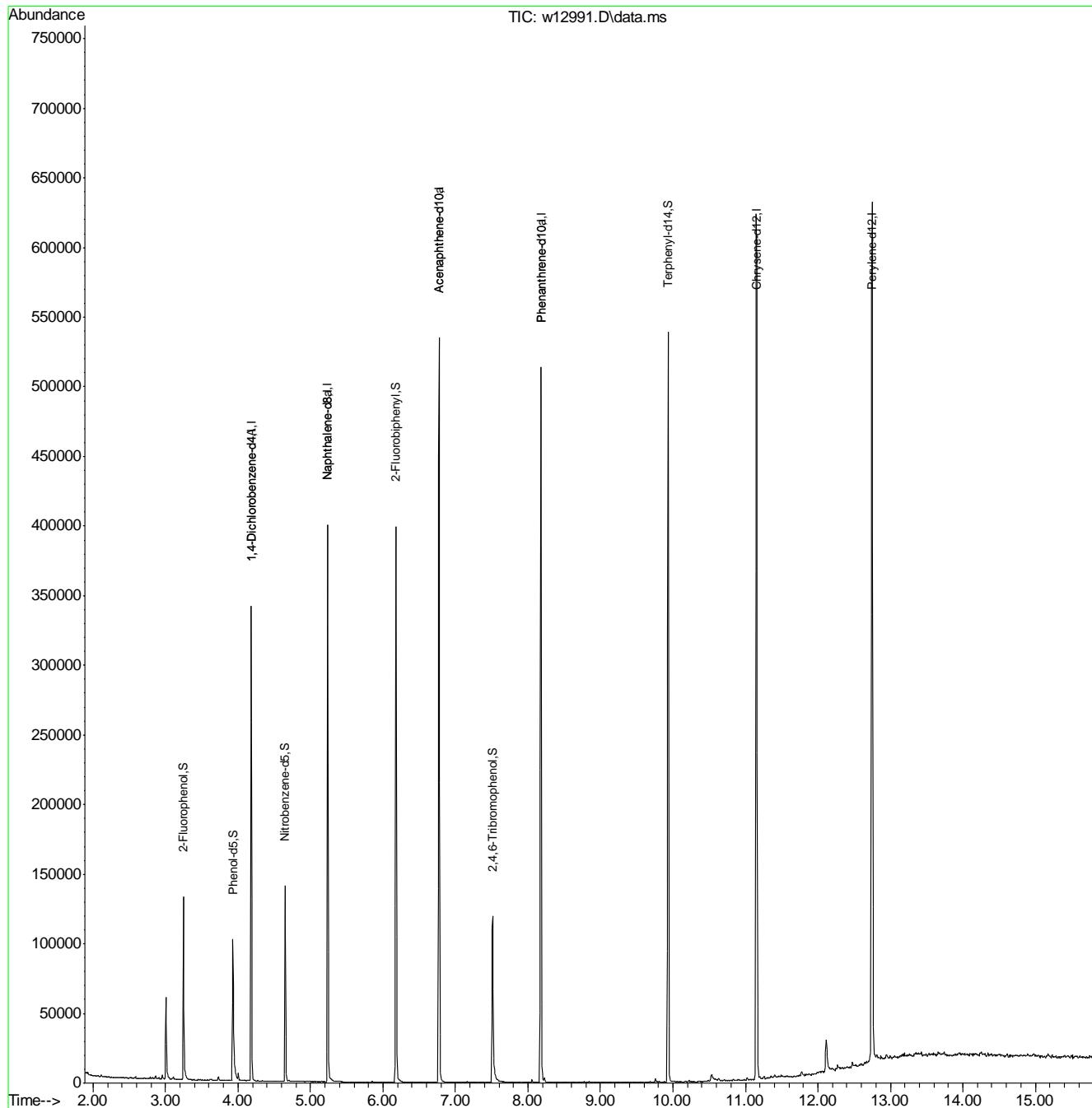
Target Compounds	Qvalue
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(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12991.D  
 Acq On : 11 Jun 2013 4:34 am  
 Operator : kristinr  
 Sample : jb38711-5  
 Misc : op33547,msw597,20.68,,,1,1  
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Jun 19 15:54:34 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12951.D  
 Acq On : 10 Jun 2013 11:55 am  
 Operator : kristinr  
 Sample : op33547-mb  
 Misc : op33547,msw596,20.45,,,1,1  
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jun 11 16:09:16 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_AP9+.m  
 Quant Title : SW-846 Method 8270  
 QLast Update : Fri May 31 10:52:01 2013  
 Response via : Initial Calibration

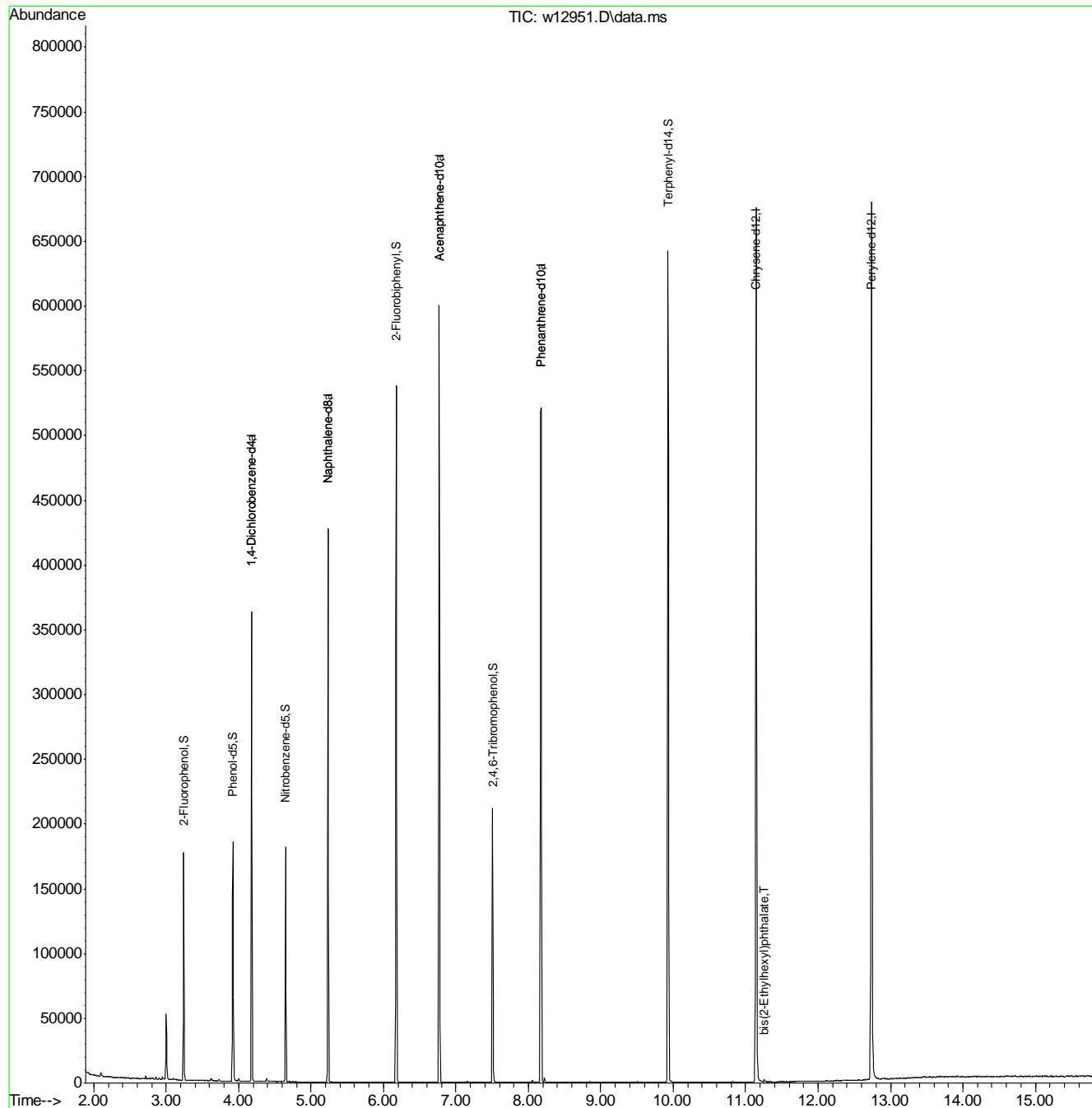
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.179	152	52501	40.00	ppm	-0.04
31) Naphthalene-d8	5.237	136	188319	40.00	ppm	-0.04
55) Acenaphthene-d10	6.770	164	124544	40.00	ppm	-0.04
86) Phenanthrene-d10	8.170	188	232179	40.00	ppm	-0.06
117) Chrysene-d12	11.146	240	296773	40.00	ppm	-0.06
133) Perylene-d12	12.738	264	303069	40.00	ppm	-0.06
145) 1,4-Dichlorobenzene-d4a	4.179	152	52501	40.00	ppm	-0.03
147) Naphthalene-d8a	5.237	136	188319	40.00	ppm	-0.04
149) Acenaphthene-d10a	6.770	164	124544	40.00	ppm	-0.04
151) Phenanthrene-d10a	8.170	188	232179	40.00	ppm	-0.06
<hr/>						
System Monitoring Compounds						
12) 2-Fluorophenol	3.244	112	49485	36.74	ppm	-0.02
Spiked Amount 100.000	Range 21 - 110		Recovery = 36.74%			
15) Phenol-d5	3.923	99	57551	35.24	ppm	-0.03
Spiked Amount 100.000	Range 10 - 110		Recovery = 35.24%			
32) Nitrobenzene-d5	4.649	82	46885	34.97	ppm	-0.04
Spiked Amount 50.000	Range 34 - 114		Recovery = 69.94%			
60) 2-Fluorobiphenyl	6.177	172	153277	38.77	ppm	-0.04
Spiked Amount 50.000	Range 43 - 116		Recovery = 77.54%			
99) 2,4,6-Tribromophenol	7.508	330	35634	38.66	ppm	-0.05
Spiked Amount 100.000	Range 10 - 123		Recovery = 38.66%			
122) Terphenyl-d14	9.928	244	266842	42.47	ppm	-0.06
Spiked Amount 50.000	Range 33 - 141		Recovery = 84.94%			
<hr/>						
Target Compounds				Qvalue		
132) bis(2-Ethylhexyl)phtha...	11.258	149	915	0.25	ppm	96

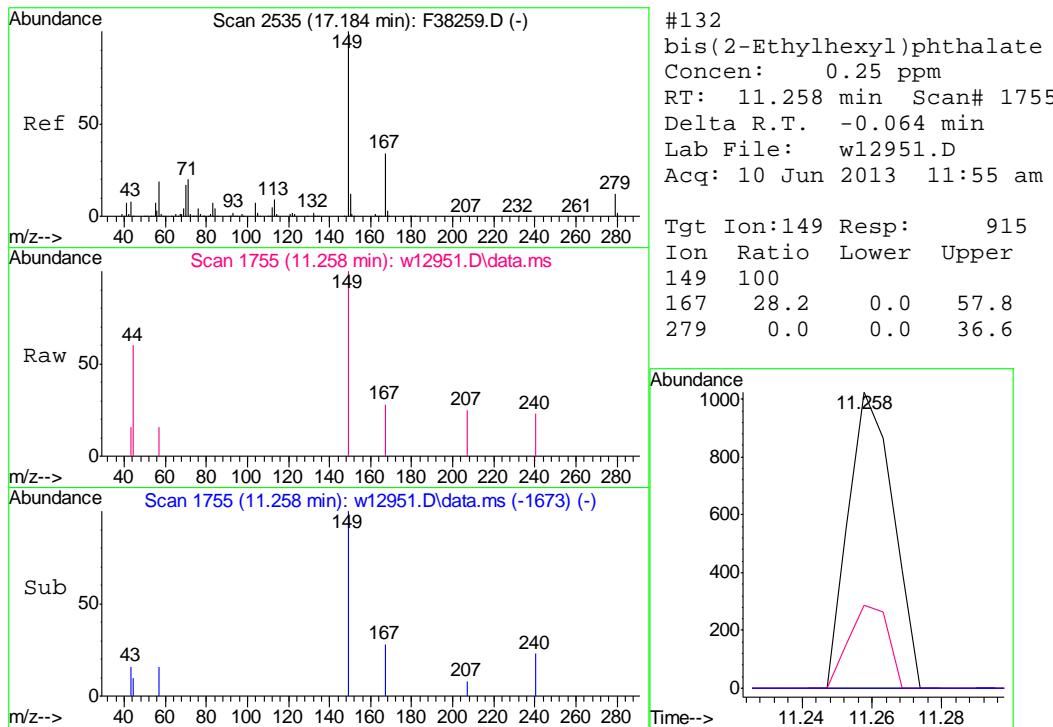
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130610\  
 Data File : w12951.D  
 Acq On : 10 Jun 2013 11:55 am  
 Operator : kristinr  
 Sample : op33547-mb  
 Misc : op33547,msw596,20.45,,,1,1  
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jun 11 16:09:16 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_AP9+.m  
 Quant Title : SW-846 Method 8270  
 QLast Update : Fri May 31 10:52:01 2013  
 Response via : Initial Calibration



10.2.1  
**10**



## **GC Volatiles**

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### **QC Data Summaries**

**(Accutest Labs of New England, Inc.)**

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**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33623-MB	BK25926.D	1	06/15/13	NK	06/14/13	OP33623	GBK894

The QC reported here applies to the following samples:

Method: SW846 8011

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	Bromofluorobenzene (S)	118%	61-167%
460-00-4	Bromofluorobenzene (S)	141%	61-167%

## Blank Spike Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33623-BS	BK25927.D	1	06/15/13	NK	06/14/13	OP33623	GBK894

The QC reported here applies to the following samples:

Method: SW846 8011

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	33	40.4	122	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	111%	61-167%
460-00-4	Bromofluorobenzene (S)	135%	61-167%

11.2.1  
11

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\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33623-MS	BK25934.D	1	06/15/13	NK	06/14/13	OP33623	GBK894
OP33623-MSD	BK25935.D	1	06/15/13	NK	06/14/13	OP33623	GBK894
JB38711-1	BK25936.D	1	06/15/13	NK	06/14/13	OP33623	GBK894

The QC reported here applies to the following samples:

Method: SW846 8011

JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

CAS No.	Compound	JB38711-1		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
106-93-4	1,2-Dibromoethane	ND		37.8	47.9	127	50.3	134	5	48-141/27
CAS No.	Surrogate Recoveries		MS	MSD		JB38711-1	Limits			
460-00-4	Bromofluorobenzene (S)		122%	123%		127%	61-167%			
460-00-4	Bromofluorobenzene (S)		141%	142%		145%	61-167%			

\* = Outside of Control Limits.

11.3.1  
11

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
JB38711-1	BK25936.D	127.0	145.0
JB38711-2	BK25928.D	126.0	145.0
JB38711-3	BK25929.D	151.0	170.0* <sup>c</sup>
JB38711-4	BK25930.D	162.0	187.0* <sup>c</sup>
JB38711-5	BK25931.D	129.0	145.0
OP33623-BS	BK25927.D	111.0	135.0
OP33623-MB	BK25926.D	118.0	141.0
OP33623-MS	BK25934.D	122.0	141.0
OP33623-MSD	BK25935.D	123.0	142.0

Surrogate  
Compounds                      Recovery  
    Limits

S1 = Bromofluorobenzene (S)      61-167%

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1
- (c) Outside control limits due to possible matrix interference.

11.4.1  
11

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GBK894-ICC894	Injection Date:	06/15/13
Lab File ID:	BK25917.D	Injection Time:	04:57
Instrument ID:	GCBK	Method:	SW846 8011

S1 <sup>a</sup>  
RT      S1 <sup>b</sup>  
RT

Check Std	4.75	5.16
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP33624-MB	BK25923.D	06/15/13	07:26	4.76	5.16
ZZZZZZ	BK25924.D	06/15/13	07:55	4.76	5.16
ZZZZZZ	BK25925.D	06/15/13	08:18	4.76	5.16
OP33623-MB	BK25926.D	06/15/13	08:41	4.76	5.16
OP33623-BS	BK25927.D	06/15/13	09:04	4.76	5.15
JB38711-2	BK25928.D	06/15/13	09:28	4.76	5.16
JB38711-3	BK25929.D	06/15/13	09:51	4.76	5.15
JB38711-4	BK25930.D	06/15/13	10:13	4.76	5.15
JB38711-5	BK25931.D	06/15/13	10:36	4.76	5.16
ZZZZZZ	BK25932.D	06/15/13	10:59	4.76	5.16

Surrogate  
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

11.5.1  
11

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GBK894-CC894	Injection Date:	06/15/13
Lab File ID:	BK25933.D	Injection Time:	11:22
Instrument ID:	GCBK	Method:	SW846 8011

S1 <sup>a</sup>  
RT      S1 <sup>b</sup>  
RT

Check Std	4.76	5.15
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP33623-MS	BK25934.D	06/15/13	11:46	4.76	5.16
OP33623-MSD	BK25935.D	06/15/13	12:09	4.76	5.15
JB38711-1	BK25936.D	06/15/13	12:32	4.76	5.16
ZZZZZZ	BK25937.D	06/15/13	12:55	4.76	5.16
ZZZZZZ	BK25938.D	06/15/13	13:18	4.76	5.15
ZZZZZZ	BK25939.D	06/15/13	13:40	4.76	5.15
ZZZZZZ	BK25940.D	06/15/13	14:03	4.76	5.15
ZZZZZZ	BK25941.D	06/15/13	14:27	4.76	5.16
ZZZZZZ	BK25942.D	06/15/13	14:49	4.76	5.15
ZZZZZZ	BK25943.D	06/15/13	15:12	4.76	5.15

Surrogate  
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

11.5.2  
11

**Initial Calibration Summary**

Job Number: JB38711

Sample: GBK894-ICC894

Account: ALNJ Accutest New Jersey

Lab FileID: BK25917.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report GCBK

Method : C:\msdchem\1\METHODS\EDS130615.M (ChemStation Integrator)

Title : EDB /Rtx35/DB1701

Last Update : Sat Jun 15 09:48:18 2013

Response via : Initial Calibration

## Calibration Files

1	=BK25916.d	2	=BK25917.d	3	=BK25918.d	4	=BK25919.d
5				6			

Compound	1	2	3	4	5	6	Avg	%RSD
----------	---	---	---	---	---	---	-----	------

1)	1,2-Dibromoethane	2.272	2.318	2.274	2.276	2.294	2.371	2.301	E8	1.67
2)	s 4-Bromofluorobenzen	1.308	1.354	1.318	1.333	1.347	1.343	1.334	E7	1.32
3)	1,2-Dibromo-3-chlor	4.071	4.082	3.964	3.995	4.020	4.048	4.030	E8	1.13

## Signal #2

1)	1,2-Dibromoethane	2.690	2.656	2.681	2.701	2.638	2.663	2.672	E6	0.88
2)	s 4-Bromofluorobenzen	1.912	2.016	2.055	2.052	2.064	2.040	2.023	E5	2.81
3)	1,2-Dibromo-3-chlor	5.633	5.438	5.366	5.276	5.231	5.208	5.359	E6	2.98

(#= Out of Range

EDS130615.M

Sat Jun 15 09:51:05 2013

11.6.1

11

**Initial Calibration Verification**

Job Number: JB38711

Sample: GBK894-ICV894

Account: ALNJ Accutest New Jersey

Lab FileID: BK25922.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BK...15\BK25922.d\ECD1A.ch Vial: 47  
 Signal #2 : C:\msdchem\1\DATA\BK130615\BK25922.d\ECD2B.ch  
 Acq On : 15 Jun 2013 7:02 am Operator: nickkk  
 Sample : icv894-20,edb soil Inst : GCBK  
 Misc : op33624,gbk894,30,,,50,,s Multiplr: 1.00  
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130615.M (ChemStation Integrator)  
 Title : EDB /Rtx35/DB1701  
 Last Update : Sat Jun 15 09:48:18 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	230.105	240.199	E6	-4.4	104	0.00	3.89- 3.95
2 s	4-Bromofluorobenzene	13.339	15.316	E6	-14.8	113	0.00	5.13- 5.19
3	1,2-Dibromo-3-chloropr	403.005	430.435	E6	-6.8	105	0.00	6.57- 6.63
***** Signal #2 *****								
1	1,2-Dibromoethane	2.672	2.824	E6	-5.7	106	0.00	3.66- 3.72
2 s	4-Bromofluorobenzene	202.318	207.967	E3	-2.8	103	0.00	4.73- 4.79
3	1,2-Dibromo-3-chloropr	5.359	5.662	E6	-5.7	104	0.00	6.41- 6.47

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 BK25917.d EDS130615.M Sat Jun 15 09:51:00 2013

**Continuing Calibration Summary**

Job Number: JB38711

Sample: GBK894-CC894

Account: ALNJ Accutest New Jersey

Lab FileID: BK25933.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Signal #1 : C:\msdchem\1\DATA\BK...15\BK25933.d\ECD1A.ch Vial: 91

Signal #2 : C:\msdchem\1\DATA\BK130615\BK25933.d\ECD2B.ch

Acq On : 15 Jun 2013 11:22 am Operator: nickkk

Sample : cc894-10,edb soil Inst : GCBK

Misc : op33624,gbk894,30,,,50,,s Multiplr: 1.00

IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130615.M (ChemStation Integrator)

Title : EDB /Rtx35/DB1701

Last Update : Sat Jun 15 09:48:18 2013

Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min

Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	230.105	229.880 E6	0.1	101	0.00	3.89-	3.95
2 s	4-Bromofluorobenzene	13.339	12.946 E6	2.9	98	0.00	5.12-	5.18
3	1,2-Dibromo-3-chloropr	403.005	396.397 E6	1.6	100	0.00	6.57-	6.63

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	2.672	2.742 E6	-2.6	102	0.00	3.66-	3.72
2 s	4-Bromofluorobenzene	202.318	201.898 E3	0.2	98	0.00	4.73-	4.79
3	1,2-Dibromo-3-chloropr	5.359	5.364 E6	-0.1	100	0.00	6.41-	6.47

(#= Out of Range SPCC's out = 0 CCC's out = 0  
BK25918.d EDS130615.M Sun Jun 16 09:14:16 2013

**Continuing Calibration Summary**

Job Number: JB38711

Sample: GBK894-CC894

Account: ALNJ Accutest New Jersey

Lab FileID: BK25944.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Signal #1 : C:\msdchem\1\DATA\BK...15\BK25944.d\ECD1A.ch Vial: 91

Signal #2 : C:\msdchem\1\DATA\BK130615\BK25944.d\ECD2B.ch

Acq On : 15 Jun 2013 3:35 pm Operator: nickkk

Sample : cc894-10,edb soil Inst : GCBK

Misc : op33624,gbk894,30,,,50,,s Multiplr: 1.00

IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130615.M (ChemStation Integrator)

Title : EDB /Rtx35/DB1701

Last Update : Sat Jun 15 09:48:18 2013

Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min

Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	230.105	230.785	E6	-0.3	101	0.00	3.89- 3.95
2 s	4-Bromofluorobenzene	13.339	13.514	E6	-1.3	103	0.00	5.13- 5.19
3	1,2-Dibromo-3-chloropr	403.005	409.602	E6	-1.6	103	0.00	6.57- 6.63

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	2.672	2.744	E6	-2.7	102	0.00	3.66- 3.72
2 s	4-Bromofluorobenzene	202.318	204.905	E3	-1.3	100	0.00	4.73- 4.79
3	1,2-Dibromo-3-chloropr	5.359	5.546	E6	-3.5	103	0.00	6.41- 6.47

(#= Out of Range SPCC's out = 0 CCC's out = 0  
BK25918.d EDS130615.M Sun Jun 16 09:18:24 2013



## GC Volatiles

---

### Raw Data

(Accutest Labs of New England, Inc.)

---

**Manual Integrations  
APPROVED  
(compounds with "m" flag)**  
 Andri Piluri  
 06/17/13 09:23

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25936.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 12:32 pm  
 Operator : nickk  
 Sample : jb38711-1,op33623  
 Misc : op33623,gbk894,30.63,,,50,,s  
 ALS Vial : 63 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:15:43 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds

2) s 4-Bromofl...	5.155	4.757	967.4E6	12852751	72.522m	63.527m
Spiked Amount	50.000	Range	26 - 158	Recovery	= 145.04%	127.05%

Target Compounds

1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.1

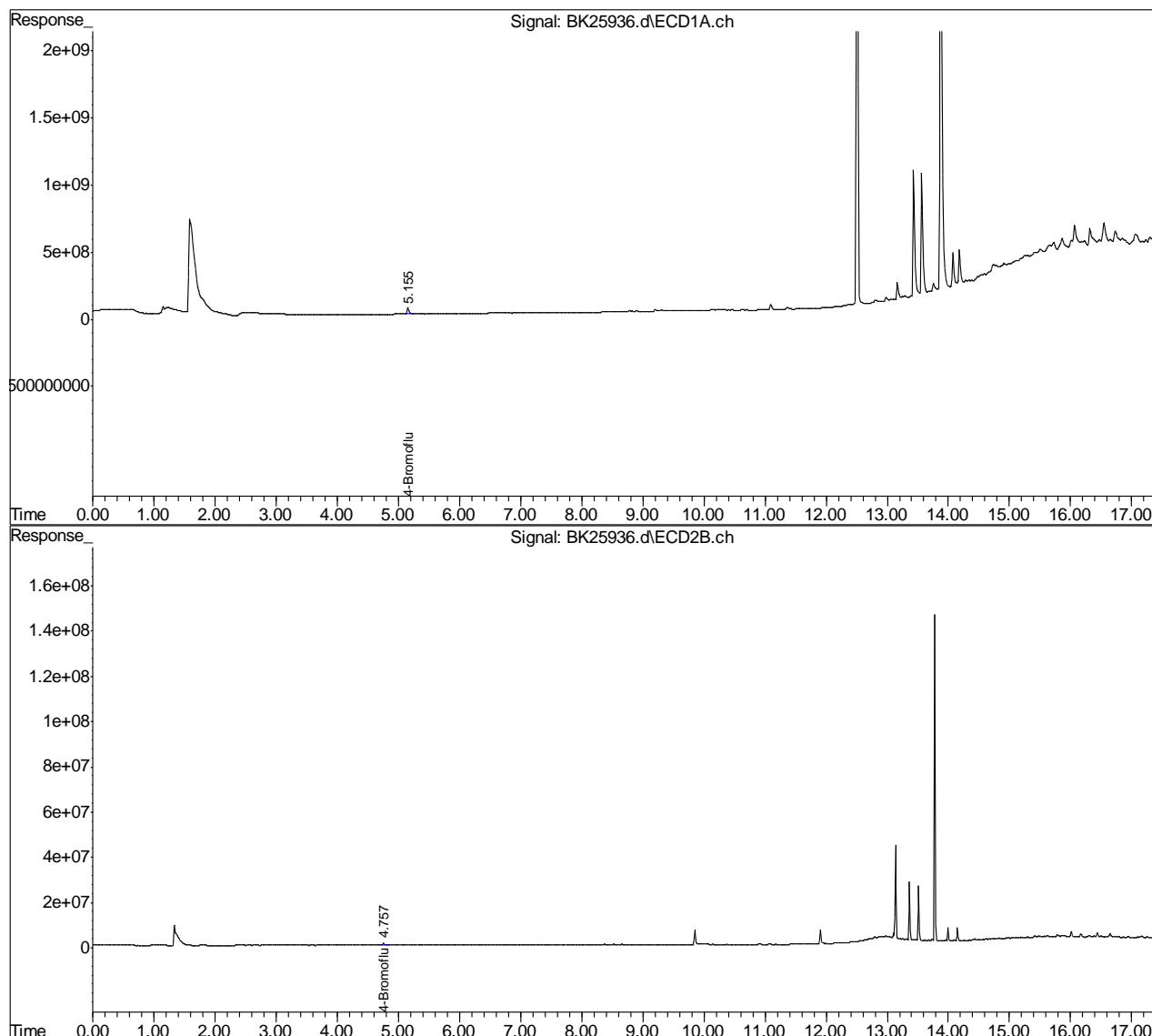
12

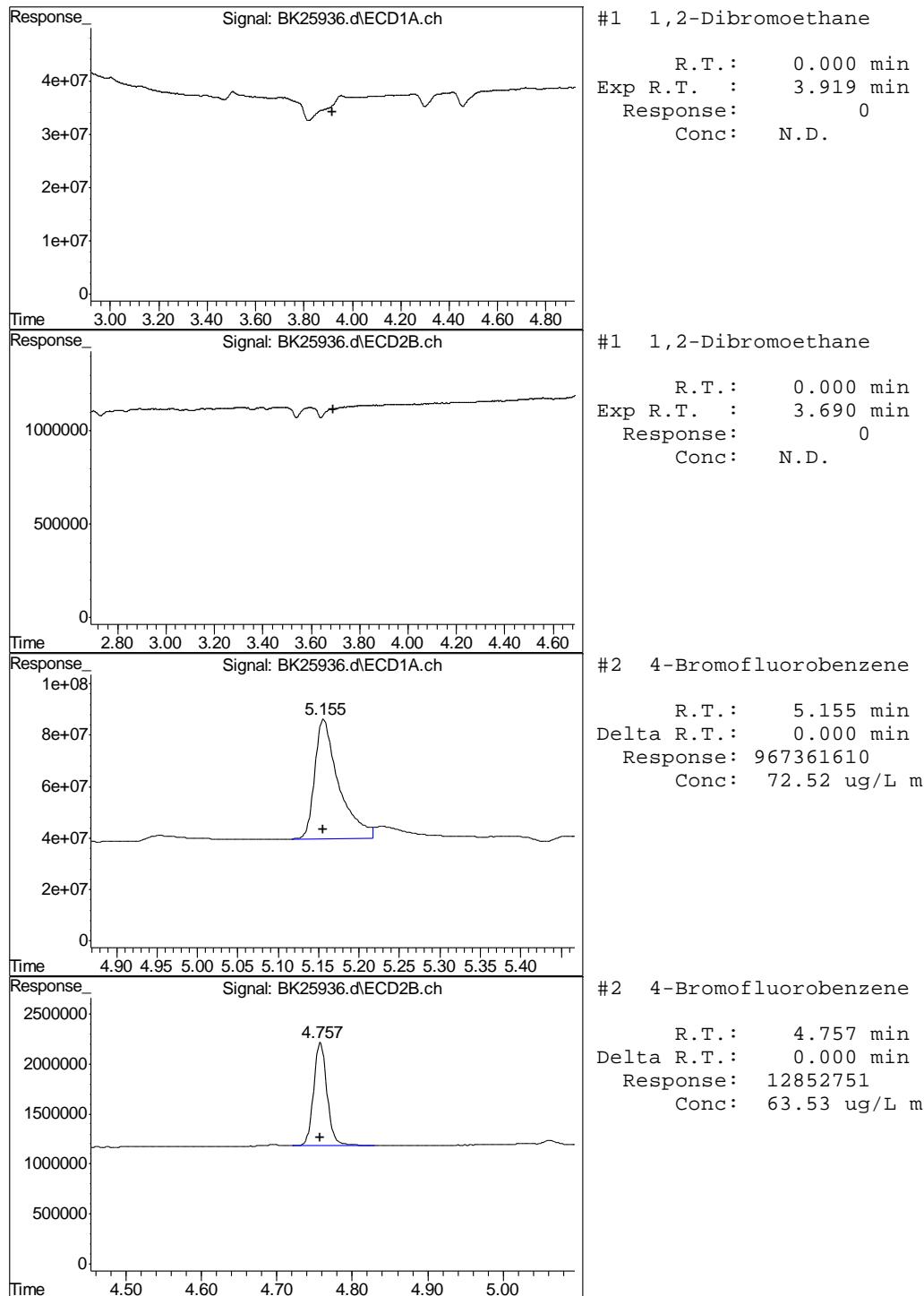
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25936.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 12:32 pm  
 Operator : nickk  
 Sample : jb38711-1,op33623  
 Misc : op33623,gbk894,30.63,,,50,,s  
 ALS Vial : 63 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:15:43 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

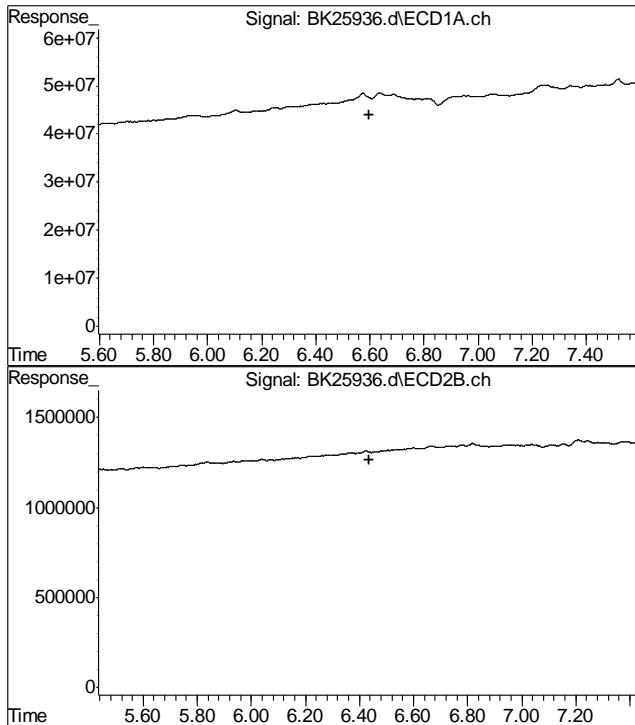
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





12.1.1

12



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T.: 6.596 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T.: 6.435 min  
Response: 0  
Conc: N.D.

**Manual Integrations**  
**APPROVED**  
**(compounds with "m" flag)**  
**Andri Piluri**  
**06/17/13 09:23**

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
Data File : BK25928.d  
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
Acq On : 15 Jun 2013 9:28 am  
Operator : nickk  
Sample : jb38711-2,op33623  
Misc : op33623,gbk894,30.59,,,50,,,s  
ALS Vial : 56 Sample Multiplier: 1

Integration File signal 1: events.e  
Integration File signal 2: events2.e  
Quant Time: Jun 15 09:55:20 2013  
Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
Quant Title : EDB /Rtx35/DB1701  
QLast Update : Sat Jun 15 09:48:18 2013  
Response via : Initial Calibration  
Integrator: ChemStation

Volume Inj. :  
Signal #1 Phase : Signal #2 Phase:  
Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
2) s 4-Bromofl... 5.155 4.757 966.5E6 12722727 72.457m 62.885m  
Spiked Amount 50.000 Range 26 - 158 Recovery = 144.91% 125.77%

Target Compounds  
1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.2

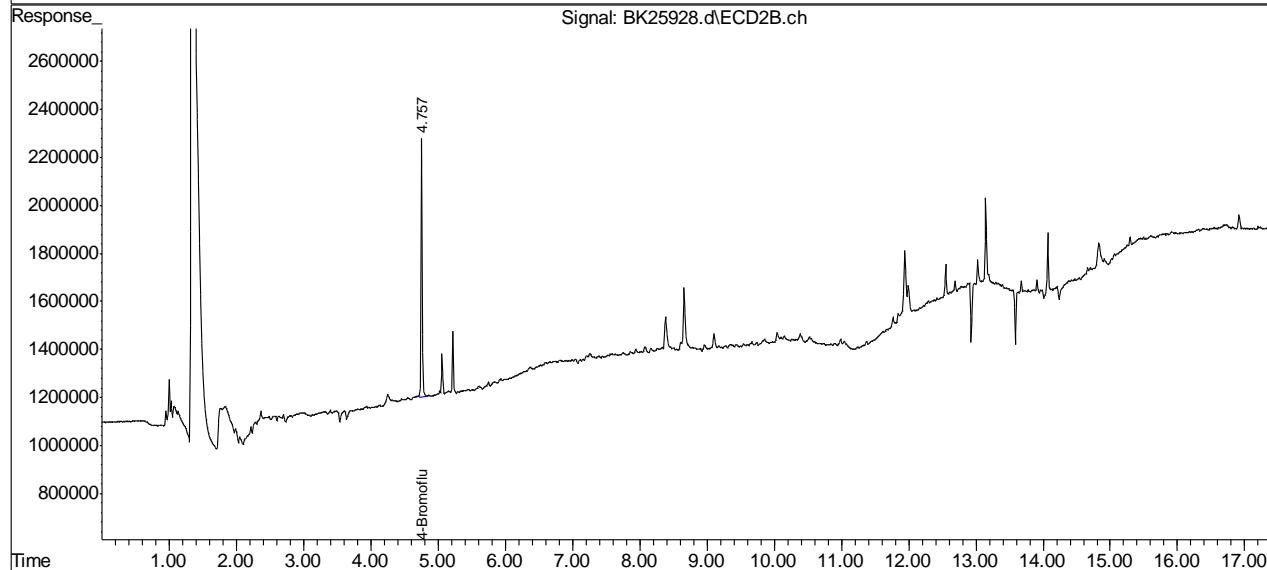
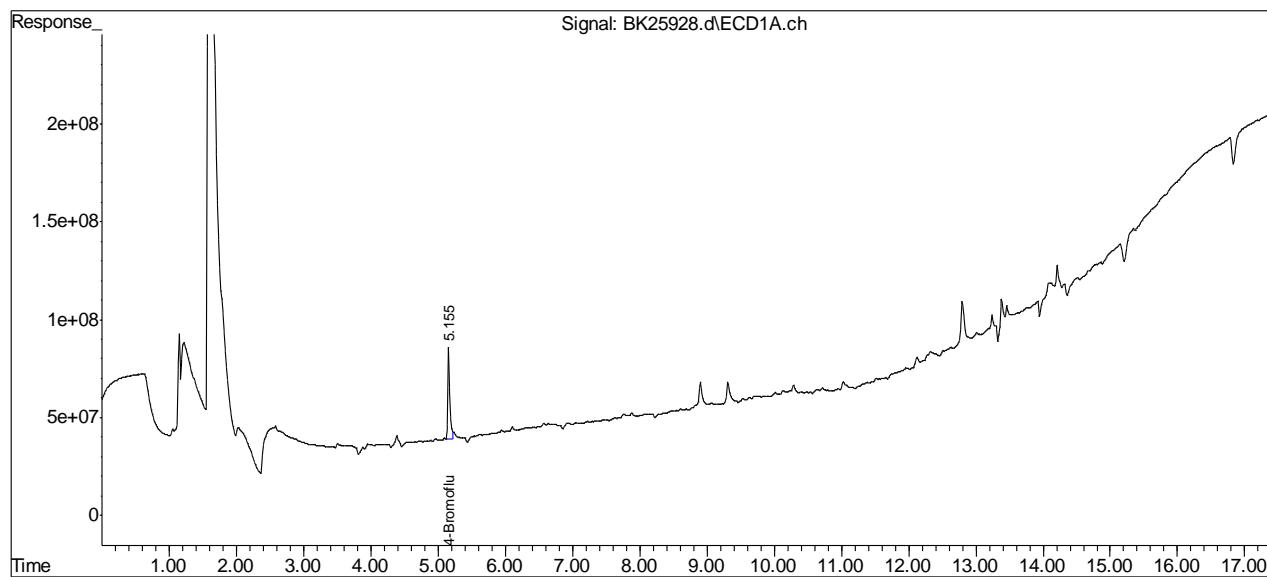
12

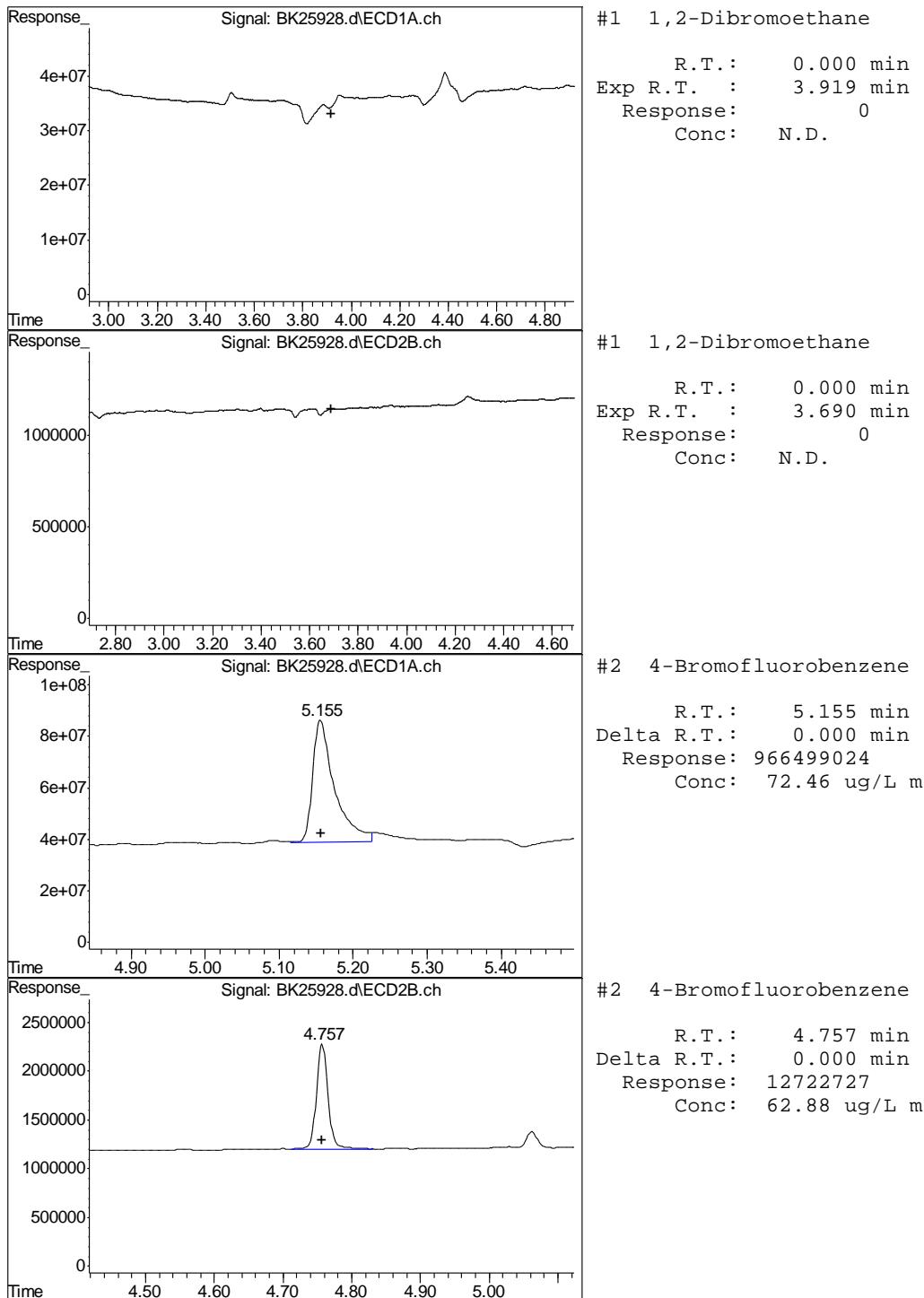
## Quantitation Report (QT Reviewed)

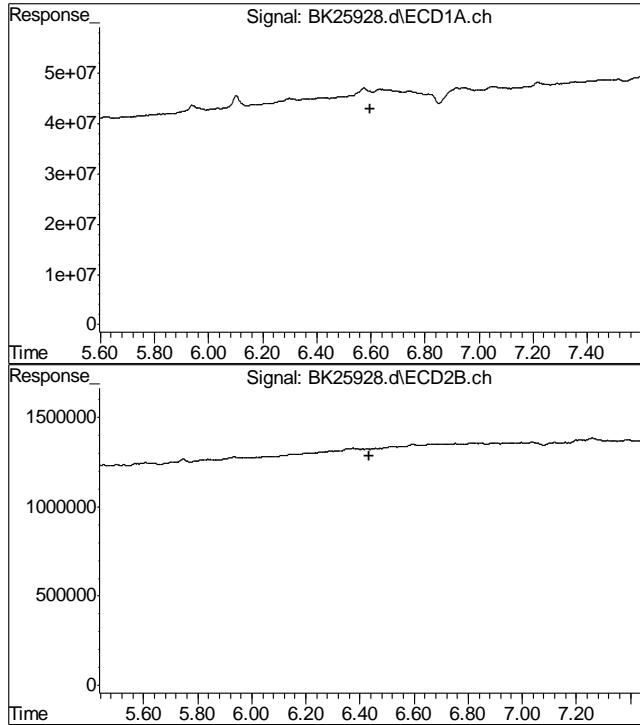
Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25928.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 9:28 am  
 Operator : nickk  
 Sample : jb38711-2,op33623  
 Misc : op33623,gbk894,30.59,,,50,,s  
 ALS Vial : 56 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 15 09:55:20 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :







#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.596 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.435 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Manual Integrations  
APPROVED  
(compounds with "m" flag)  
Andri Piluri  
06/17/13 09:23

Data Path : C:\msdchem\1\DATA\BK130615\  
Data File : BK25929.d  
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
Acq On : 15 Jun 2013 9:51 am  
Operator : nickk  
Sample : jb38711-3,op33623  
Misc : op33623,gbk894,30.67,,,50,,s  
ALS Vial : 57 Sample Multiplier: 1

Integration File signal 1: events.e  
Integration File signal 2: events2.e  
Quant Time: Jun 16 09:12:52 2013  
Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
Quant Title : EDB /Rtx35/DB1701  
QLast Update : Sat Jun 15 09:48:18 2013  
Response via : Initial Calibration  
Integrator: ChemStation

Volume Inj. :  
Signal #1 Phase : Signal #2 Phase:  
Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
2) s 4-Bromofl... 5.155 4.757 1131.7E6 15268401 84.840m 75.467m  
Spiked Amount 50.000 Range 26 - 158 Recovery = 169.68%# 150.93%

Target Compounds  
1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.3

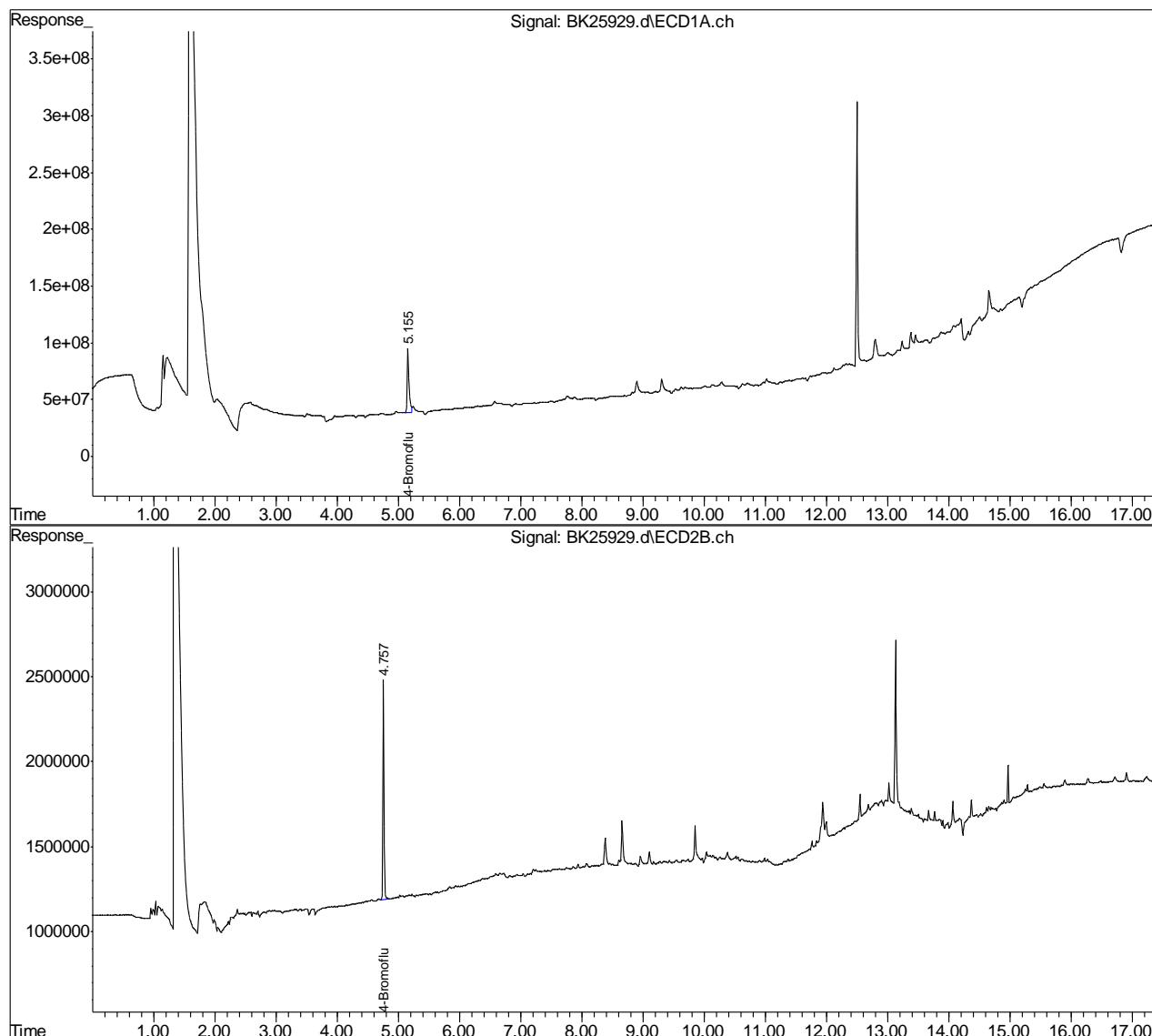
12

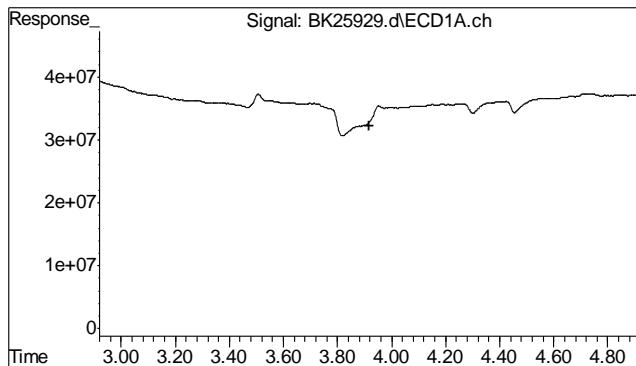
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25929.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 9:51 am  
 Operator : nickk  
 Sample : jb38711-3,op33623  
 Misc : op33623,gbk894,30.67,,,50,,s  
 ALS Vial : 57 Sample Multiplier: 1

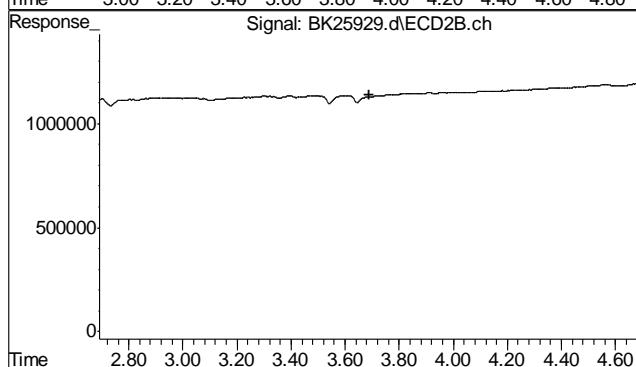
Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:12:52 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

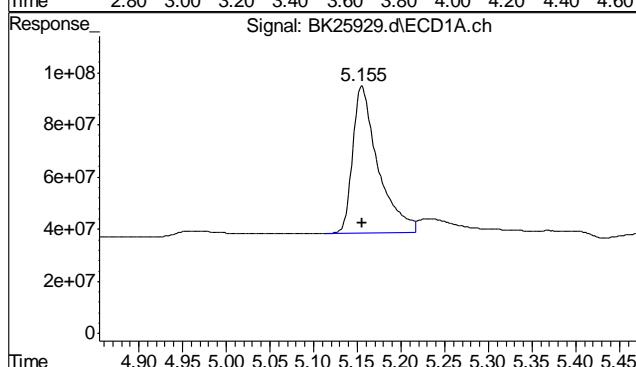




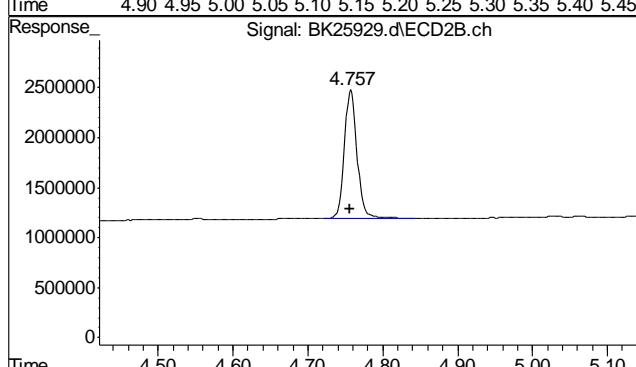
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.919 min  
Response: 0  
Conc: N.D.



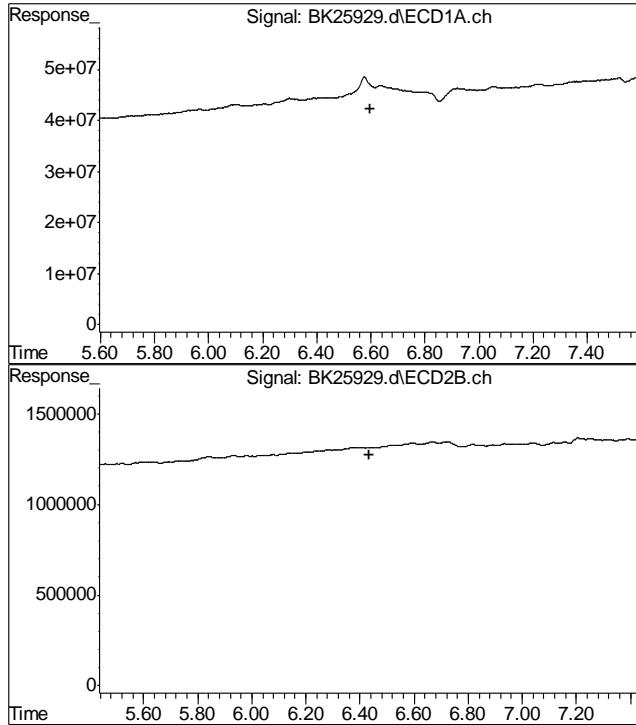
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.690 min  
Response: 0  
Conc: N.D.



#2 4-Bromofluorobenzene  
R.T.: 5.155 min  
Delta R.T.: -0.001 min  
Response: 1131671616  
Conc: 84.84 ug/L m

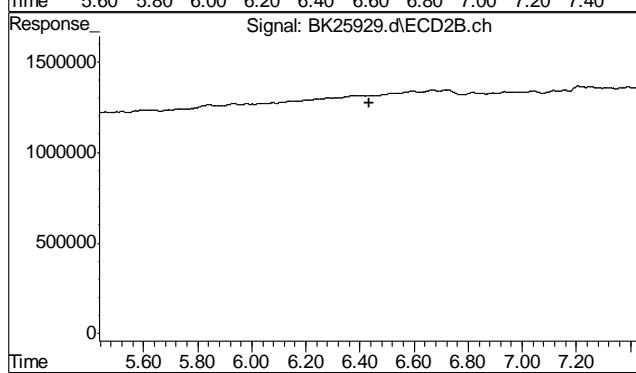


#2 4-Bromofluorobenzene  
R.T.: 4.757 min  
Delta R.T.: 0.000 min  
Response: 15268401  
Conc: 75.47 ug/L m



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.596 min  
Response: 0  
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.435 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Manual Integrations  
APPROVED  
(compounds with "m" flag)  
Andri Piluri  
06/17/13 09:23

Data Path : C:\msdchem\1\DATA\BK130615\  
Data File : BK25930.d  
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
Acq On : 15 Jun 2013 10:13 am  
Operator : nickk  
Sample : jb38711-4,op33623  
Misc : op33623,gbk894,30.42,,,50,,,s  
ALS Vial : 58 Sample Multiplier: 1

Integration File signal 1: events.e  
Integration File signal 2: events2.e  
Quant Time: Jun 16 09:13:06 2013  
Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
Quant Title : EDB /Rtx35/DB1701  
QLast Update : Sat Jun 15 09:48:18 2013  
Response via : Initial Calibration  
Integrator: ChemStation

Volume Inj. :  
Signal #1 Phase : Signal #2 Phase:  
Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
2) s 4-Bromofl... 5.155 4.757 1246.9E6 16423326 93.481m 81.176m  
Spiked Amount 50.000 Range 26 - 158 Recovery = 186.96%# 162.35%#

Target Compounds  
1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

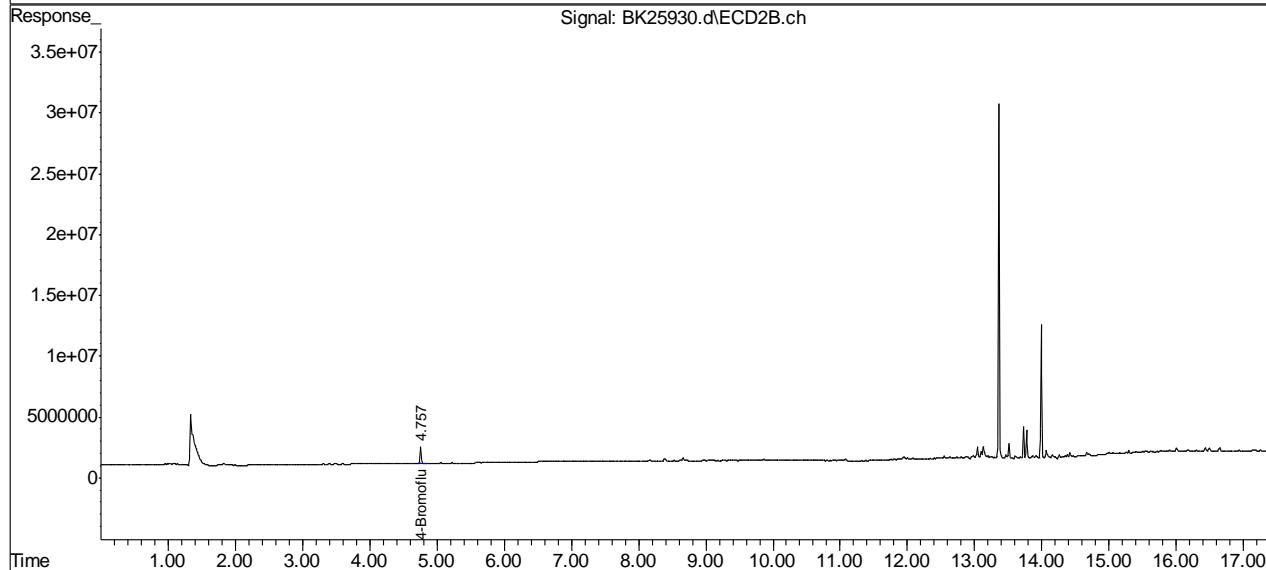
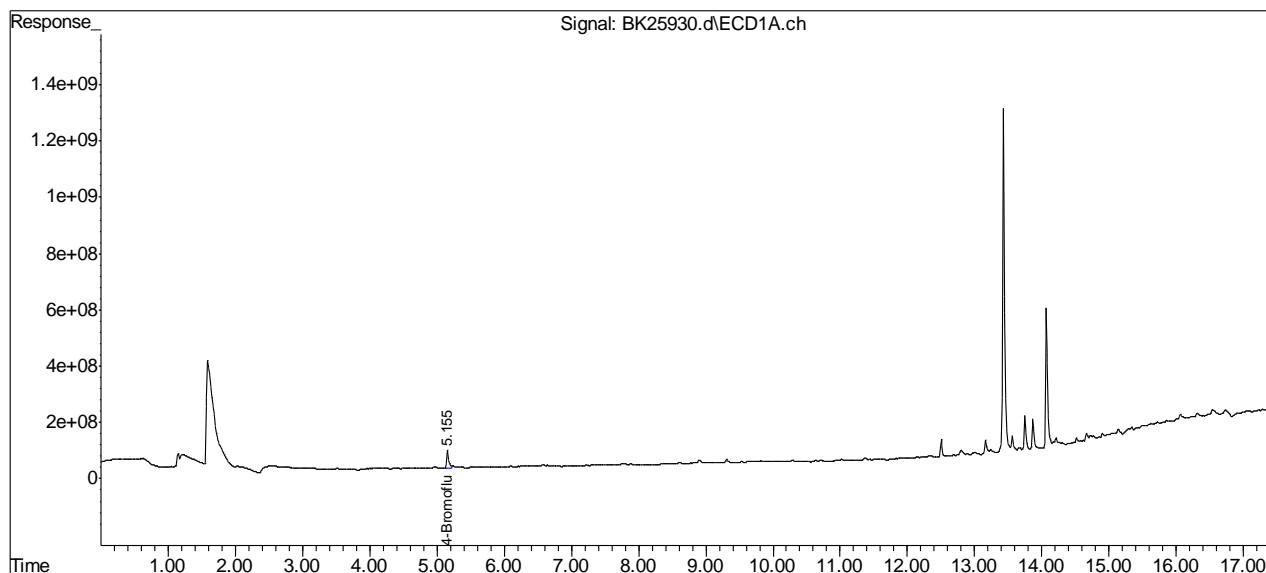
12.1.4  
12

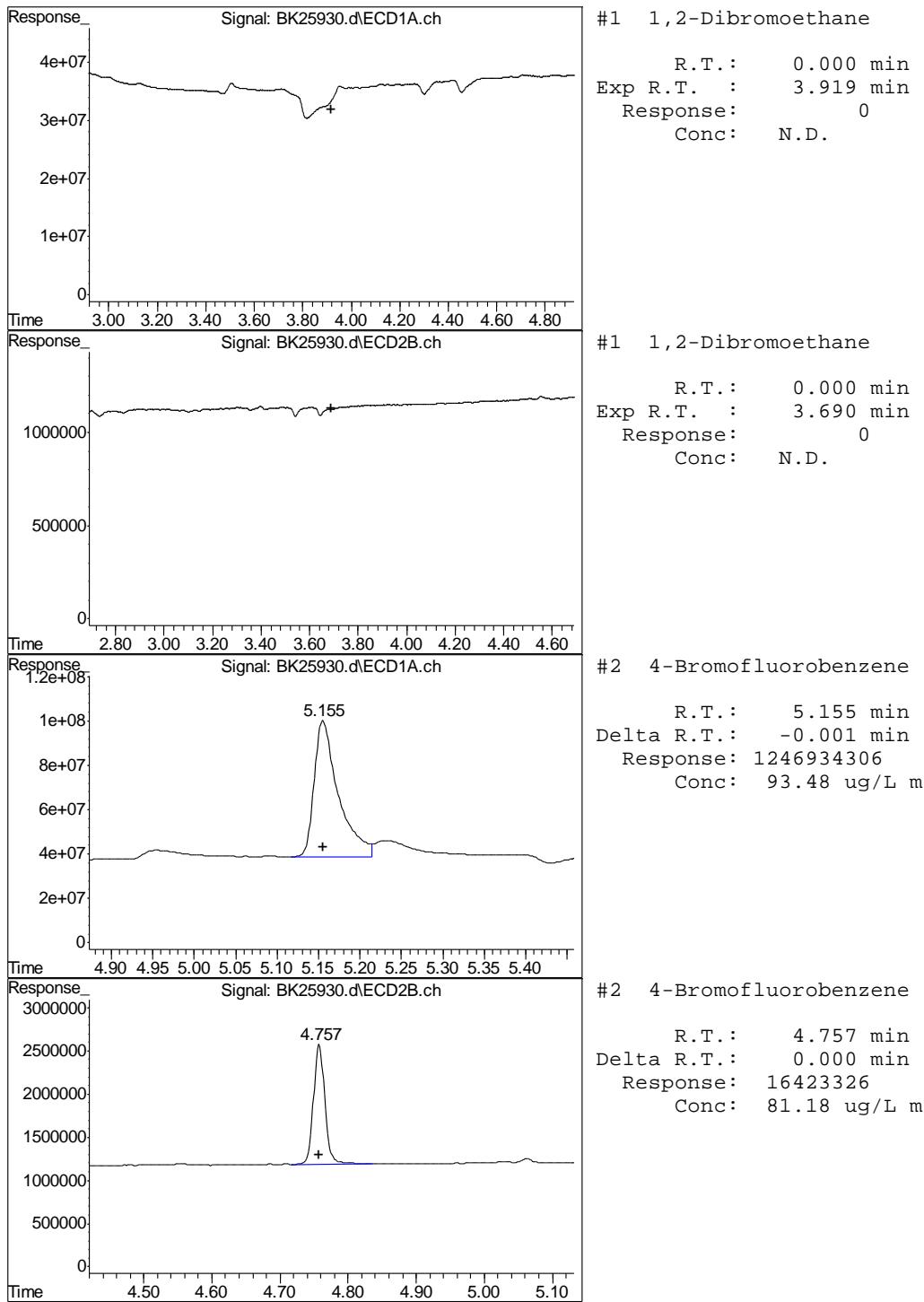
## Quantitation Report (QT Reviewed)

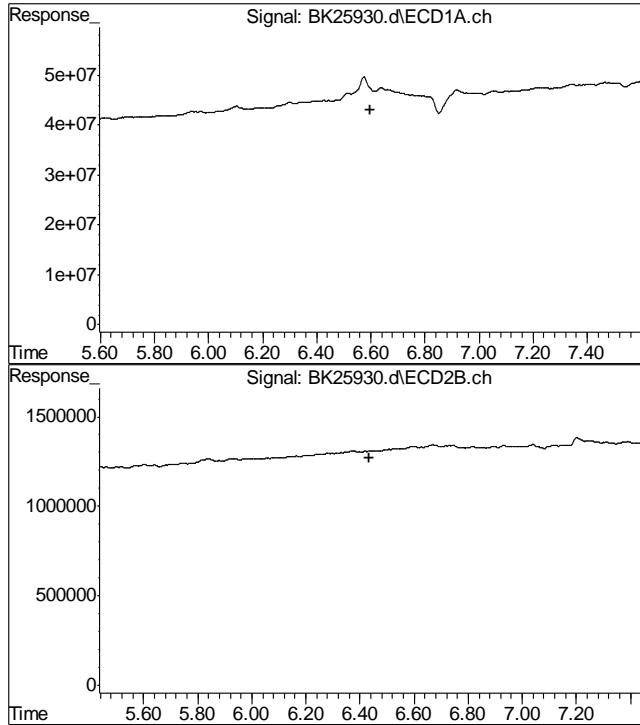
Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25930.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 10:13 am  
 Operator : nickk  
 Sample : jb38711-4,op33623  
 Misc : op33623,gbk894,30.42,,,50,,s  
 ALS Vial : 58 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:13:06 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



12.1.4  
**12**



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.596 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.435 min  
Response: 0  
Conc: N.D.

**Manual Integrations  
APPROVED  
(compounds with "m" flag)**  
 Andri Piluri  
 06/17/13 09:23

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25931.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 10:36 am  
 Operator : nickk  
 Sample : jb38711-5,op33623  
 Misc : op33623,gbk894,30.30,,,50,,s  
 ALS Vial : 59 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:13:21 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds

2) s 4-Bromofl...	5.156	4.758	967.9E6	13070767	72.564m	64.605m
Spiked Amount	50.000	Range	26 - 158	Recovery	= 145.13%	129.21%

Target Compounds

1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.5

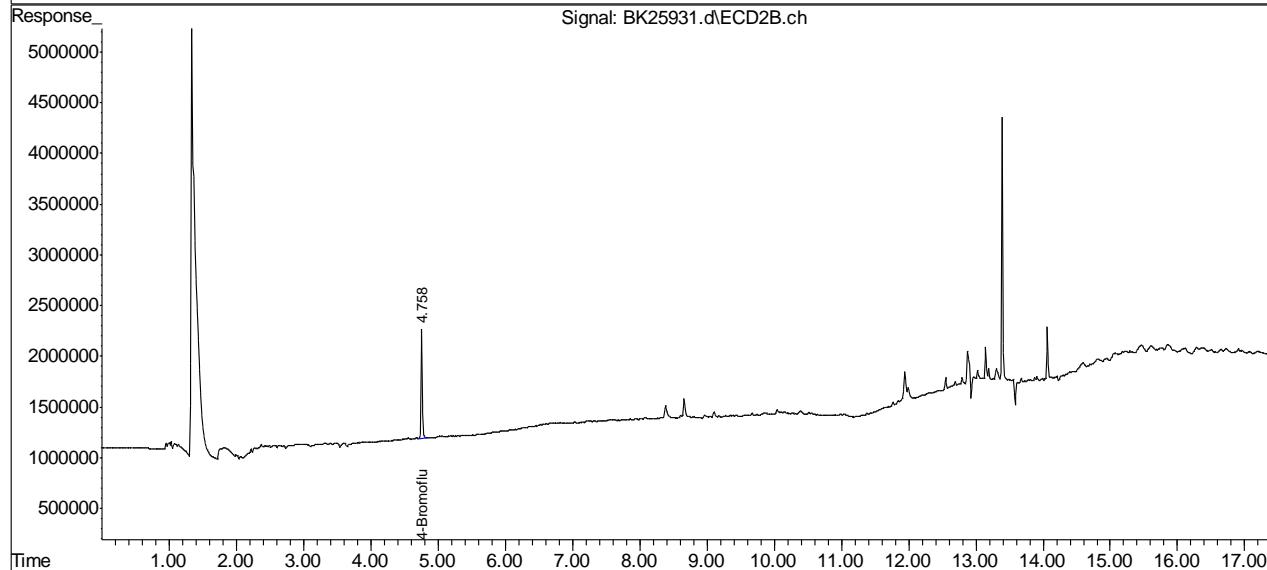
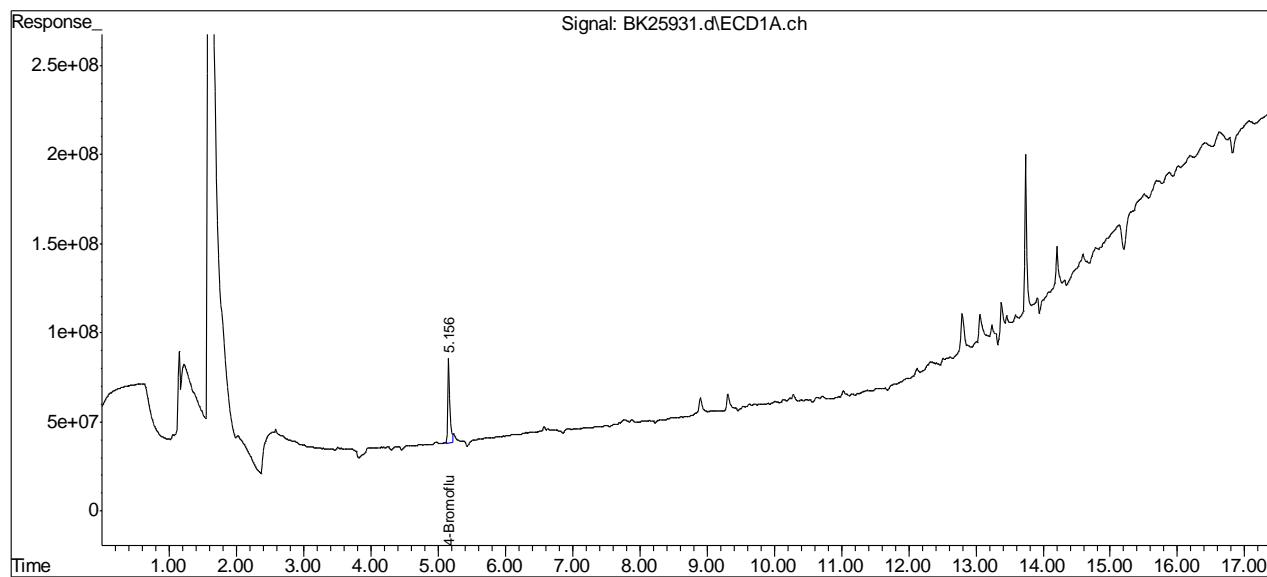
12

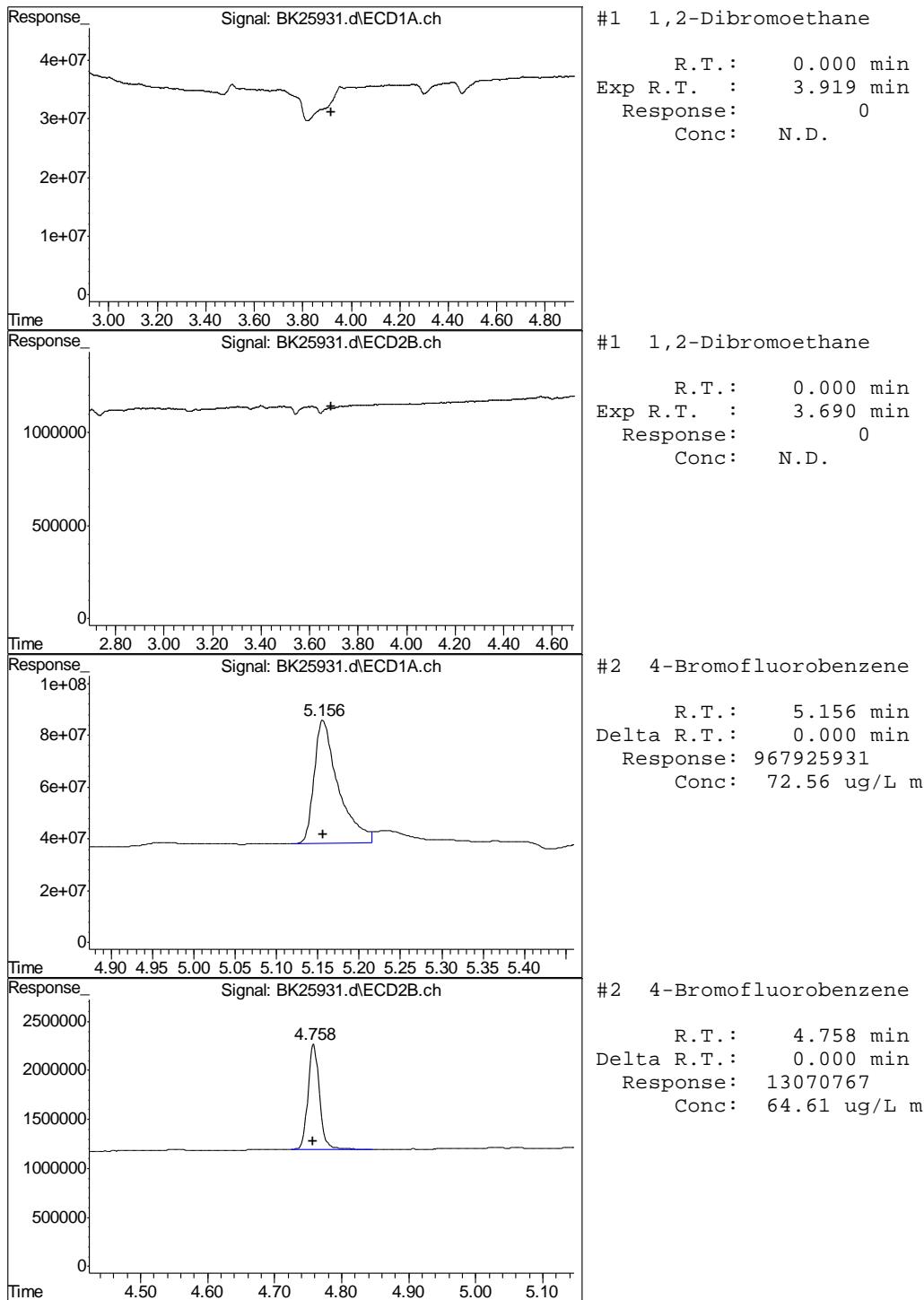
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25931.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 10:36 am  
 Operator : nickk  
 Sample : jb38711-5,op33623  
 Misc : op33623,gbk894,30.30,,,50,,s  
 ALS Vial : 59 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 16 09:13:21 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

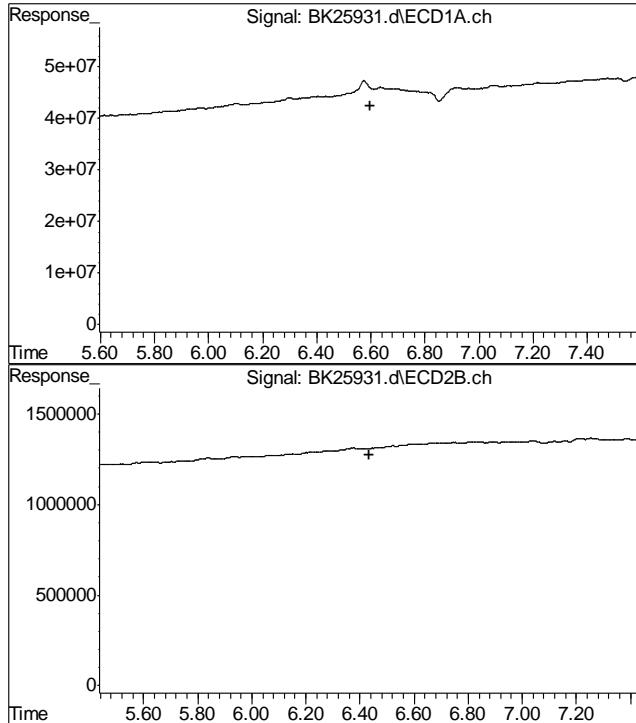
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





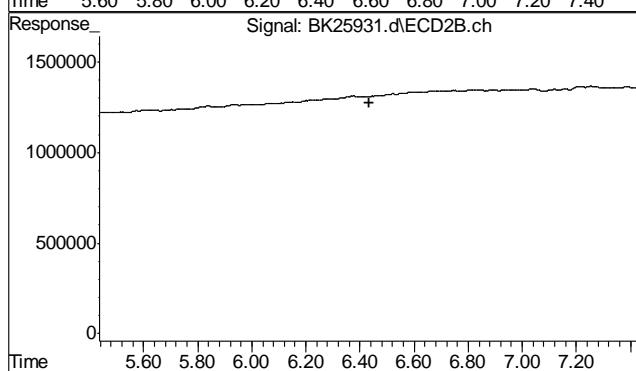
12.1.5

12



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.596 min  
Response: 0  
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.435 min  
Response: 0  
Conc: N.D.

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Andri Piluri  
 06/17/13 09:23

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25926.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 8:41 am  
 Operator : nickk  
 Sample : op33623-mb  
 Misc : op33623,gbk894,30.36,,,50,,s  
 ALS Vial : 54 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 15 09:54:39 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 5.156 4.757 941.8E6 11968840 70.605m 59.159m  
 Spiked Amount 50.000 Range 26 - 158 Recovery = 141.21% 118.32%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

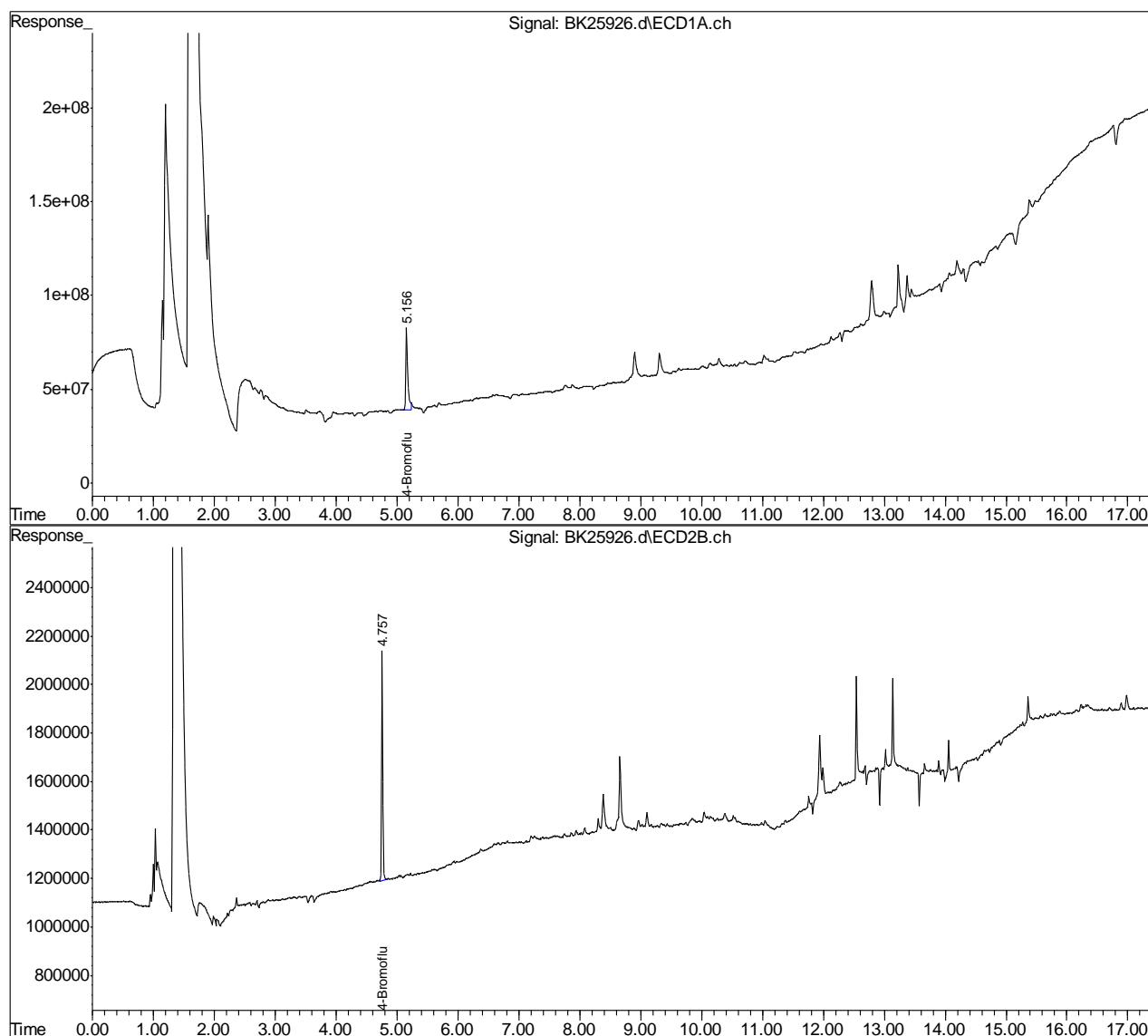
 12.2.1  
  
12

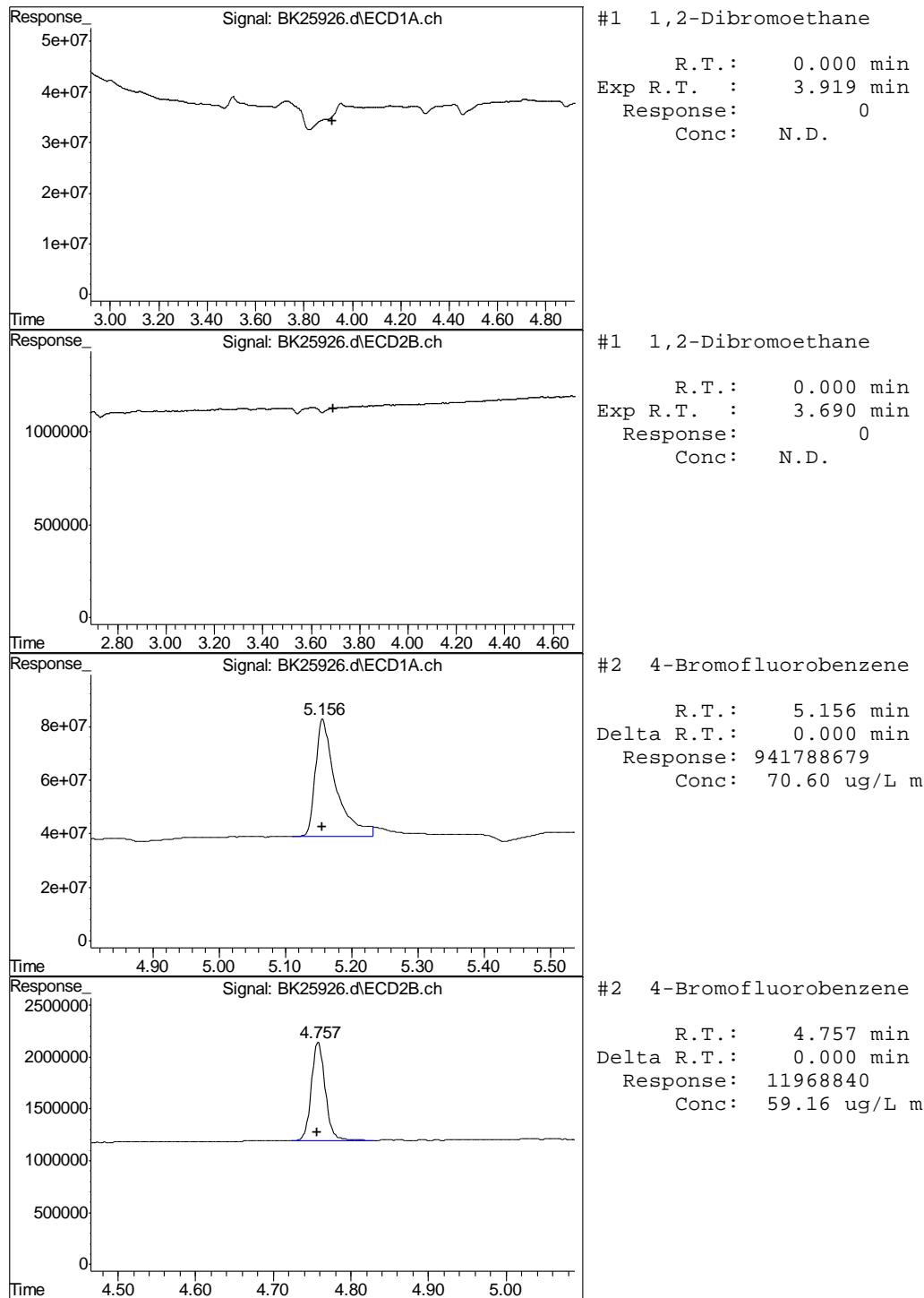
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130615\  
 Data File : BK25926.d  
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch  
 Acq On : 15 Jun 2013 8:41 am  
 Operator : nickk  
 Sample : op33623-mb  
 Misc : op33623,gbk894,30.36,,,50,,s  
 ALS Vial : 54 Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Jun 15 09:54:39 2013  
 Quant Method : C:\msdchem\1\METHODS\EDS130615.M  
 Quant Title : EDB /Rtx35/DB1701  
 QLast Update : Sat Jun 15 09:48:18 2013  
 Response via : Initial Calibration  
 Integrator: ChemStation

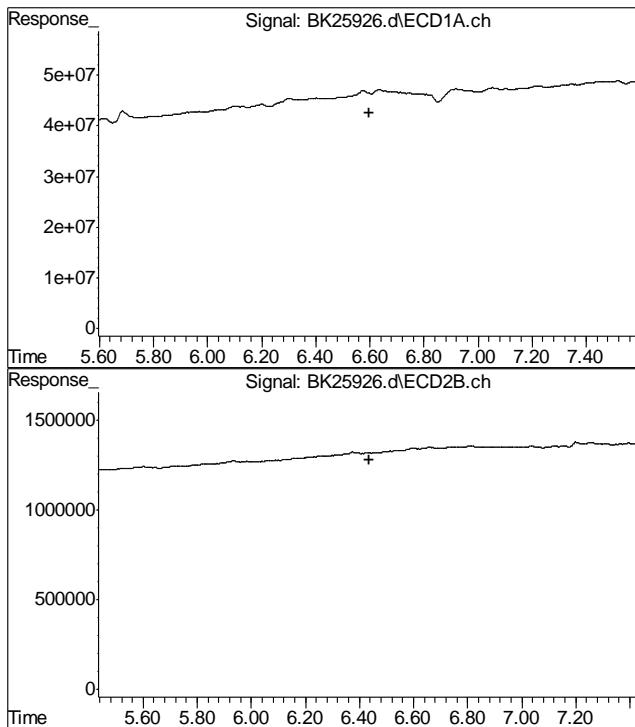
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





12.2.1

12



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.596 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 6.435 min  
Response: 0  
Conc: N.D.

12.2.1

12



## Metals Analysis

### QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
Analyst: EAL      Run ID: MA15735  
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:39	MA15735-STD1	1		STD1
09:44	MA15735-STD2	1		STD2
09:48	MA15735-STD3	1		STD3
09:53	MA15735-STD4	1		STD4
09:57	MA15735-ICV1	1		
10:04	MA15735-ICB1	1		
10:14	MA15735-CCV1	1		
10:18	MA15735-CCB1	1		
10:22	MA15735-CRIA1	1		
10:27	MA15735-ICSA1	1		
10:31	MA15735-ICSAB1	1		
10:35	MP21154-B1	1		
10:40	MP21154-MB1	1		
10:44	MP21154-S1	1		CA AND MG OVER RANGE; MS OUT FOR AL, NBEED PS.
10:48	MP21154-S2	1		CA AND MG OVER RANGE.
10:53	MC21383-16	1		(sample used for QC only; not part of login JB38711)
10:57	MP21154-SD1	5		DNR CA AND MG.
11:02	MP21154-LC1	1		
11:06	MA15735-CCV2	1		
11:10	MA15735-CCB2	1		
11:15	JB38711-1	1		
11:19	JB38711-2	1		
11:23	JB38711-3	1		
11:28	JB38711-4	1		
11:32	JB38711-5	1		
-----> Last reportable sample/prep for job JB38711				
11:36	ZZZZZZ	1		
11:41	ZZZZZZ	1		
11:45	ZZZZZZ	1		
11:50	ZZZZZZ	1		
11:54	ZZZZZZ	1		
12:03	MA15735-CCV3	1		
12:08	MA15735-CCB3	1		
12:12	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15735

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:16	ZZZZZZ	1		
12:21	ZZZZZZ	1		
12:25	ZZZZZZ	1		
12:30	ZZZZZZ	1		
12:34	ZZZZZZ	1		
12:39	ZZZZZZ	1		
12:43	ZZZZZZ	1		
12:48	ZZZZZZ	1		
12:52	MP21155-B1	1		
12:56	MA15735-CCV4	1		
13:00	MA15735-CCB4	1		
13:05	MP21155-MB1	1		
13:09	MP21155-S1	1		
13:14	MP21155-S2	1		
13:18	MC21395-4	1		(sample used for QC only; not part of login JB38711)
13:22	MP21155-SD1	5		
13:26	MP21155-B2	1		
13:31	MP21155-LC1	1		
13:35	ZZZZZZ	1		
13:40	ZZZZZZ	1		
13:44	ZZZZZZ	1		
13:56	MA15735-CCV5	1		
14:02	MA15735-CCB5	1		
14:07	ZZZZZZ	1		DNR: FOR CONFIRMATION ONLY.
14:11	ZZZZZZ	1		
14:16	ZZZZZZ	1		
14:20	ZZZZZZ	1		
14:25	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:39	ZZZZZZ	1		DNR: CARRY OVER.
14:43	ZZZZZZ	1		
14:48	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15735

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:54	MA15735-CCV6	1		
15:02	ZZZZZZ	1		DNR: SEE RERUN FOR CCB.
15:07	MA15735-CCB6	1		
15:12	ZZZZZZ	1		
15:16	ZZZZZZ	1		
15:21	ZZZZZZ	1		
15:25	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:34	ZZZZZZ	1		
15:38	ZZZZZZ	1		
15:42	ZZZZZZ	1		
15:53	ZZZZZZ	10		
15:57	ZZZZZZ	10		
16:02	MA15735-CCV7	1		
16:06	MA15735-CCB7	1		
16:10	ZZZZZZ	10		
16:15	ZZZZZZ	10		
16:19	ZZZZZZ	10		
16:23	ZZZZZZ	10		
16:28	ZZZZZZ	100		
16:32	ZZZZZZ	10		
16:36	ZZZZZZ	100		
16:41	ZZZZZZ	100		
16:45	ZZZZZZ	100		
16:49	ZZZZZZ	10		
16:54	MA15735-CCV8	1		
16:58	MA15735-CCB8	1		
17:02	MA15735-CRIA2	1		
17:07	MA15735-ICSA2	1		
17:11	MA15735-ICSAB2	1		
17:16	MA15735-CCV9	1		
17:20	MA15735-CCB9	1		

-----> Last reportable CCB for job JB38711  
Refer to raw data for calibration curve and standards.

## INTERNAL STANDARD SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15735

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
09:39	MA15735-STD1	2191 R	71007 R	13893 R
09:44	MA15735-STD2	2192	71049	14053
09:48	MA15735-STD3			14000
09:53	MA15735-STD4	2197	70676	14048
09:57	MA15735-ICV1	2194	71132	14217
10:04	MA15735-ICB1	2180	71053	14127
10:14	MA15735-CCV1	2184	72055	14130
10:18	MA15735-CCB1	2159	71235	14198
10:22	MA15735-CRIA1	2169	70954	13719
10:27	MA15735-ICSA1	2036	65763	13784
10:31	MA15735-ICSAB1	2057	66133	13861
10:35	MP21154-B1	2182	70414	14085
10:40	MP21154-MB1	2200	71050	14426
10:44	MP21154-S1	1907	64515	13721
10:48	MP21154-S2	1889	63911	13765
10:53	MC21383-16	1899	64259	13816
10:57	MP21154-SD1	2043	67939	13965
11:02	MP21154-LC1	2367	77308	15708
11:06	MA15735-CCV2	2187	71292	14368
11:10	MA15735-CCB2	2164	70700	14197
11:15	JB38711-1	2237	74236	15325
11:19	JB38711-2	2330	76387	15494
11:23	JB38711-3	2505	81655	16495
11:28	JB38711-4	2113	71367	14996
11:32	JB38711-5	2304	75418	15420
11:36	ZZZZZZ	2230	73190	14801
11:41	ZZZZZZ	2268	75627	16184
11:45	ZZZZZZ	2212	74051	15450
11:50	ZZZZZZ	2222	74086	15739
11:54	ZZZZZZ	2165	73851	15553
12:03	MA15735-CCV3	2159	72184	14517
12:08	MA15735-CCB3	2142	71115	14382
12:12	ZZZZZZ	2367	80276	16567

## INTERNAL STANDARD SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15735

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
12:16	ZZZZZZ	1983	68991	14620
12:21	ZZZZZZ	2210	75027	15666
12:25	ZZZZZZ	1944	66618	14131
12:30	ZZZZZZ	2197	74256	15549
12:34	ZZZZZZ	1948	70740	14670
12:39	ZZZZZZ	2246	75844	15529
12:43	ZZZZZZ	2251	75208	15485
12:48	ZZZZZZ	2322	76599	15458
12:52	MP21155-B1	2170	70975	14256
12:56	MA15735-CCV4	2203	71382	14313
13:00	MA15735-CCB4	2181	70731	14269
13:05	MP21155-MB1	2180	71783	14629
13:09	MP21155-S1	2300	75857	15309
13:14	MP21155-S2	2292	75369	15195
13:18	MC21395-4	2332	76242	15121
13:22	MP21155-SD1	2241	72302	14452
13:26	MP21155-B2	2168	70841	14318
13:31	MP21155-LC1	2375	77939	15675
13:35	ZZZZZZ	2108	71204	14997
13:40	ZZZZZZ	2229	74414	15333
13:44	ZZZZZZ	2183	74679	15423
13:56	MA15735-CCV5	2171	71947	14359
14:02	MA15735-CCB5	2164	70589	14106
14:07	ZZZZZZ	2074	67424	14381
14:11	ZZZZZZ	2327	76759	15637
14:16	ZZZZZZ	2004	67659	14540
14:20	ZZZZZZ	2465	83104	17570
14:25	ZZZZZZ	2357	78910	16375
14:30	ZZZZZZ	2318	77527	15892
14:34	ZZZZZZ	2145	73928	15341
14:39	ZZZZZZ	2332	77344	15526
14:43	ZZZZZZ	2309	77081	15700
14:48	ZZZZZZ	2274	76747	15341

## INTERNAL STANDARD SUMMARY

Login Number: JB38711  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
 Analyst: EAL      Run ID: MA15735  
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
14:54	MA15735-CCV6	2227	72766	14584
15:02	ZZZZZZ	2166	71254	14417
15:07	MA15735-CCB6	2196	71797	14258
15:12	ZZZZZZ	2401	78505	15788
15:16	ZZZZZZ	2377	78117	15877
15:21	ZZZZZZ	2344	77196	15803
15:25	ZZZZZZ	2340	77340	15703
15:29	ZZZZZZ	2315	77339	15630
15:34	ZZZZZZ	2294	76962	15571
15:38	ZZZZZZ	2279	76833	15376
15:42	ZZZZZZ	2309	77186	15515
15:53	ZZZZZZ	2168	72229	14353
15:57	ZZZZZZ	2222	72906	14696
16:02	MA15735-CCV7	2168	73076	14550
16:06	MA15735-CCB7	2172	71788	14323
16:10	ZZZZZZ	2220	73208	14397
16:15	ZZZZZZ	2234	72928	14572
16:19	ZZZZZZ	2173	71991	14654
16:23	ZZZZZZ	2241	73177	14780
16:28	ZZZZZZ	2186	72436	14492
16:32	ZZZZZZ	2198	72697	14531
16:36	ZZZZZZ	2164	72249	14426
16:41	ZZZZZZ	2182	72141	14265
16:45	ZZZZZZ	2184	71993	14513
16:49	ZZZZZZ	2210	73236	14773
16:54	MA15735-CCV8	2170	72487	14569
16:58	MA15735-CCB8	2153	72019	14376
17:02	MA15735-CRIA2	2177	71768	14345
17:07	MA15735-ICSA2	2041	67446	14231
17:11	MA15735-ICSAB2	2042	67345	14409
17:16	MA15735-CCV9	2175	72651	14572
17:20	MA15735-CCB9	2153	72516	14471

R = Reference for ISTD limits. ! = Outside limits.

INTERNAL STANDARD SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15735

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
------	--------------------	--------	--------	--------

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15735      Units: ug/l

Metal	Sample ID:	Time:		10:04		10:18		11:10		12:08	
		RL	IDL	ICB1 raw	final	CCB1 raw	final	CCB2 raw	final	CCB3 raw	final
Aluminum		200	12	anr							
Antimony		10	1.1	anr							
Arsenic		10	1.7	anr							
Barium		50	.32	anr							
Beryllium		4.0	.1	anr							
Boron		100	1.1								
Cadmium		4.0	.25	anr							
Calcium		5000	21	anr							
Chromium		10	.48	anr							
Cobalt		50	.29	anr							
Copper		25	.93	anr							
Gold		50	1.5								
Iron		100	3.5	anr							
Lead		10	1.2	0.10	<10	0.30	<10	0.0	<10	-0.10	<10
Magnesium		5000	30	anr							
Manganese		15	.16	anr							
Molybdenum		100	.31								
Nickel		40	.45	anr							
Palladium		50	2.2								
Platinum		50	6.4								
Potassium		5000	54	anr							
Selenium		10	1.7	anr							
Silicon		100	2								
Silver		5.0	.81	anr							
Sodium		5000	16	anr							
Strontium		10	.12								
Thallium		10	1.2	anr							
Tin		100	.87								
Titanium		50	.66								
Tungsten		100	9.3								
Vanadium		10	.82	anr							
Zinc		20	.45	anr							
Zirconium		50	.45								

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP  
QC Limits: result < RL

Date Analyzed: 06/12/13  
Run ID: MA15735

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15735      Units: ug/l

Metal	Time: Sample ID: RL	IDL	13:00 CCB4		14:02 CCB5		15:07 CCB6		16:06 CCB7		final
			raw	final	raw	final	raw	final	raw	final	
Aluminum	200	12	anr								
Antimony	10	1.1	anr								
Arsenic	10	1.7	anr								
Barium	50	.32	anr								
Beryllium	4.0	.1	anr								
Boron	100	1.1									
Cadmium	4.0	.25	anr								
Calcium	5000	21	anr								
Chromium	10	.48	anr								
Cobalt	50	.29	anr								
Copper	25	.93	anr								
Gold	50	1.5									
Iron	100	3.5	anr								
Lead	10	1.2	0.0	<10	1.2	<10	1.6	<10	1.1	<10	
Magnesium	5000	30	anr								
Manganese	15	.16	anr								
Molybdenum	100	.31									
Nickel	40	.45	anr								
Palladium	50	2.2									
Platinum	50	6.4									
Potassium	5000	54	anr								
Selenium	10	1.7	anr								
Silicon	100	2									
Silver	5.0	.81	anr								
Sodium	5000	16	anr								
Strontium	10	.12									
Thallium	10	1.2	anr								
Tin	100	.87									
Titanium	50	.66									
Tungsten	100	9.3									
Vanadium	10	.82	anr								
Zinc	20	.45	anr								
Zirconium	50	.45									

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP  
QC Limits: result < RL

Date Analyzed: 06/12/13  
Run ID: MA15735

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15735      Units: ug/l

Metal	Sample ID:	Time: RL	16:58 CCB8		17:20 CCB9	
			IDL	raw	final	raw
Aluminum		200	12	anr		
Antimony		10	1.1	anr		
Arsenic		10	1.7	anr		
Barium		50	.32	anr		
Beryllium		4.0	.1	anr		
Boron		100	1.1			
Cadmium		4.0	.25	anr		
Calcium		5000	21	anr		
Chromium		10	.48	anr		
Cobalt		50	.29	anr		
Copper		25	.93	anr		
Gold		50	1.5			
Iron		100	3.5	anr		
Lead		10	1.2	0.10	<10	-0.30
Magnesium		5000	30	anr		
Manganese		15	.16	anr		
Molybdenum		100	.31			
Nickel		40	.45	anr		
Palladium		50	2.2			
Platinum		50	6.4			
Potassium		5000	54	anr		
Selenium		10	1.7	anr		
Silicon		100	2			
Silver		5.0	.81	anr		
Sodium		5000	16	anr		
Strontium		10	.12			
Thallium		10	1.2	anr		
Tin		100	.87			
Titanium		50	.66			
Tungsten		100	9.3			
Vanadium		10	.82	anr		
Zinc		20	.45	anr		
Zirconium		50	.45			

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP  
QC Limits: result < RL

Date Analyzed: 06/12/13  
Run ID: MA15735

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP Date Analyzed: 06/12/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15735 Units: ug/l

Metal	Time: Sample ID: Metal	09:57 ICV True	Results ICV1	% Rec	CCV True	10:14 CCV1	Results CCV1	% Rec	CCV True	11:06 CCV2	Results CCV2	% Rec
Aluminum		anr										
Antimony		anr										
Arsenic		anr										
Barium		anr										
Beryllium		anr										
Boron												
Cadmium		anr										
Calcium		anr										
Chromium		anr										
Cobalt		anr										
Copper		anr										
Gold												
Iron		anr										
Lead	3000	2950	98.3		2000	1950	97.5		2000	1960	98.0	
Magnesium		anr										
Manganese		anr										
Molybdenum												
Nickel		anr										
Palladium												
Platinum												
Potassium		anr										
Selenium		anr										
Silicon												
Silver		anr										
Sodium		anr										
Strontium												
Thallium		anr										
Tin												
Titanium												
Tungsten												
Vanadium		anr										
Zinc		anr										
Zirconium												

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/12/13

Run ID: MA15735

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP Date Analyzed: 06/12/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15735 Units: ug/l

Metal	Time: Sample ID: Metal	True	12:03 CCV Results	% Rec	True	12:56 CCV Results	% Rec	True	13:56 CCV Results	% Rec
Aluminum		anr								
Antimony		anr								
Arsenic		anr								
Barium		anr								
Beryllium		anr								
Boron										
Cadmium		anr								
Calcium		anr								
Chromium		anr								
Cobalt		anr								
Copper		anr								
Gold										
Iron		anr								
Lead	2000	1980	99.0		2000	1940	97.0	2000	1960	98.0
Magnesium		anr								
Manganese		anr								
Molybdenum										
Nickel		anr								
Palladium										
Platinum										
Potassium		anr								
Selenium		anr								
Silicon										
Silver		anr								
Sodium		anr								
Strontium										
Thallium		anr								
Tin										
Titanium										
Tungsten										
Vanadium		anr								
Zinc		anr								
Zirconium										

(\*) Outside of QC limits

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/12/13

Run ID: MA15735

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP Date Analyzed: 06/12/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15735 Units: ug/l

Metal	Time: Sample ID: Metal	True	14:54 CCV	Results	% Rec	True	16:02 CCV	Results	% Rec	True	16:54 CCV	Results	% Rec
Aluminum		anr											
Antimony		anr											
Arsenic		anr											
Barium		anr											
Beryllium		anr											
Boron													
Cadmium		anr											
Calcium		anr											
Chromium		anr											
Cobalt		anr											
Copper		anr											
Gold													
Iron		anr											
Lead	2000	1970	98.5		2000	1980	99.0		2000	1960	98.0		
Magnesium		anr											
Manganese		anr											
Molybdenum													
Nickel		anr											
Palladium													
Platinum													
Potassium		anr											
Selenium		anr											
Silicon													
Silver		anr											
Sodium		anr											
Strontium													
Thallium		anr											
Tin													
Titanium													
Tungsten													
Vanadium		anr											
Zinc		anr											
Zirconium													

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/12/13

Run ID: MA15735

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP  
QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/12/13

Run ID: MA15735

Methods: SW846 6010C

Units: ug/l

Metal	Time: Sample ID: Metal	17:16 CCV True	Results CCV9	% Rec
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Gold				
Iron	anr			
Lead	2000	1960	98.0	
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Platinum				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			
Zirconium				

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/12/13

Run ID: MA15735

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB38711  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP Date Analyzed: 06/12/13 Methods: SW846 6010C  
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA15735 Units: ug/l

Metal	Time:		10:22		17:02				
	Sample ID:	CRI	CRIA	CRIAl	Results	% Rec	CRIA2	Results	% Rec
Aluminum	200	200		anr					
Antimony	6.0	10		anr					
Arsenic	4.0	10		anr					
Barium	50	50		anr					
Beryllium	4.0	4.0		anr					
Boron	100	100							
Cadmium	4.0	4.0		anr					
Calcium	5000	5000		anr					
Chromium	10	10		anr					
Cobalt	50	50		anr					
Copper	25	25		anr					
Gold	50	50							
Iron	100	100		anr					
Lead	5.0	10	10.3	103.0	10.5	105.0			
Magnesium	5000	5000		anr					
Manganese	15	15		anr					
Molybdenum	100	100							
Nickel	40	40		anr					
Palladium	50	50							
Platinum	50	50							
Potassium	5000	5000		anr					
Selenium	10	10		anr					
Silicon	100	100							
Silver	5.0	5.0		anr					
Sodium	5000	5000		anr					
Strontium	10	10							
Thallium	5.0	10		anr					
Tin	100	100							
Titanium	50	50							
Tungsten	100	100							
Vanadium	10	10		anr					
Zinc	20	20		anr					
Zirconium	50	50							

(\*) Outside of QC limits

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

QC Limits: CRI 70-130% CRIA 70-130%

Run ID: MA15735

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

**INTERFERING ELEMENT CHECK STANDARDS SUMMARY**  
**Part 1 - ICSA and ICSAB Standards**

Login Number: JB38711  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP      Date Analyzed: 06/12/13      Methods: SW846 6010C  
 QC Limits: 80 to 120 % Recovery      Run ID: MA15735      Units: ug/l

Metal	Time:		10:27		10:31		17:07		17:11		
	Sample ID:	ICSA	ICSA	ICSA1 Results	% Rec	ICSA1 Results	% Rec	ICSA2 Results	% Rec	ICSA2 Results	% Rec
Aluminum	500000	500000	518000	103.6		516000	103.2	521000	104.2	514000	102.8
Antimony		2000	-1.0			2010	100.5	0.20		2060	103.0
Arsenic		2000	0.10			1990	99.5	-0.50		2050	102.5
Barium		500	-0.10			505	101.0	-0.20		495	99.0
Beryllium		500	0.0			472	94.4	0.10		452	90.4
Boron		1000	3.2			975	97.5	1.4		975	97.5
Cadmium		1000	-0.30			1000	100.0	-0.20		1010	101.0
Calcium	500000	500000	456000	91.2		461000	92.2	455000	91.0	453000	90.6
Chromium		500	0.10			476	95.2	-0.40		468	93.6
Cobalt		500	-0.10			461	92.2	0.0		467	93.4
Copper		500	-0.30			499	99.8	-0.80		512	102.4
Gold		500	2.3			486	97.2	2.8		473	94.6
Iron	200000	200000	189000	94.5		190000	95.0	177000	88.5	174000	87.0
Lead		1000	0.30			867	86.7	-0.20		888	88.8
Magnesium	500000	500000	498000	99.6		498000	99.6	477000	95.4	473000	94.6
Manganese		500	0.50			472	94.4	0.40		456	91.2
Molybdenum		1000	-1.1			931	93.1	-1.1		938	93.8
Nickel		1000	-0.50			853	85.3	-0.80		838	83.8
Palladium		500	-20			502	100.4	-27		473	94.6
Platinum		500	-25			469	93.8	-20		457	91.4
Potassium			52.6			63.5		61.6		45.1	
Selenium		2000	0.80			1930	96.5	-1.0		1990	99.5
Silicon		2000	32.6			2110	105.5	39.0		2200	110.0
Silver		1000	0.40			1040	104.0	0.70		1010	101.0
Sodium			107			115		55.9		55.7	
Strontium		1000	1.1			973	97.3	0.50		919	91.9
Thallium		2000	0.40			1800	90.0	0.30		1800	90.0
Tin		1000	1.6			937	93.7	1.3		926	92.6
Titanium		500	8.5			499	99.8	8.4		499	99.8
Tungsten		2000	-34			1790	89.5	-32		1710	85.5
Vanadium		500	0.10			489	97.8	1.2		481	96.2
Zinc		1000	0.90			875	87.5	1.1		887	88.7
Zirconium		500	-0.40			451	90.2	-0.40		442	88.4

(\*) Outside of QC limits

INTERFERING ELEMENT CHECK STANDARDS SUMMARY  
Part 1 - ICSA and ICSAB Standards

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB061213M1.ICP

Date Analyzed: 06/12/13

Methods: SW846 6010C

QC Limits: 80 to 120 % Recovery

Run ID: MA15735

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

06/11/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	20	1.2	3.6		
Antimony	1.0	.11	.15		
Arsenic	1.0	.17	.21		
Barium	5.0	.032	.073		
Beryllium	0.40	.01	.024		
Boron	10	.11	.11		
Cadmium	0.40	.025	.042		
Calcium	500	2.1	6.3		
Chromium	1.0	.048	.095		
Cobalt	5.0	.029	.047		
Copper	2.5	.093	.56		
Gold	5.0	.15	.43		
Iron	10	.35	.87		
Lead	1.0	.12	.17	-0.030	<1.0
Magnesium	500	3	5.1		
Manganese	1.5	.016	.04		
Molybdenum	10	.031	.07		
Nickel	4.0	.045	.044		
Palladium	5.0	.22	.64		
Platinum	5.0	.64	1.5		
Potassium	500	5.4	8.6		
Selenium	1.0	.17	.35		
Silicon	10	.2	3.3		
Silver	0.50	.081	.13		
Sodium	500	1.6	3.3		
Strontium	1.0	.012	.03		
Thallium	1.0	.12	.13		
Tin	10	.087	.14		
Titanium	5.0	.066	.14		
Tungsten	10	.93	.94		
Vanadium	1.0	.082	.13		
Zinc	2.0	.045	.16		
Zirconium	5.0	.045	.088		

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JB38711  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date: 06/11/13

Metal	MC21383-16 Original MS	Spikelot MPICP	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Gold				
Iron	anr			
Lead	37.9	115	101	76.7    75-125
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Platinum				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			
Zirconium				

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38711  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 06/11/13

Metal	MC21383-16 Original	MSD	Spikelot MPICP	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Gold						
Iron	anr					
Lead	37.9	123	101	84.6	6.7	20
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Palladium						
Platinum						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					
Zirconium						

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date:

06/11/13

06/11/13

Metal	BSP Result	Spikelot MPICP	QC % Rec	LCS Limits	Spikelot MPLCS78	QC % Rec	Limits
Aluminum	anr						
Antimony	anr						
Arsenic	anr						
Barium	anr						
Beryllium	anr						
Boron							
Cadmium	anr						
Calcium	anr						
Chromium	anr						
Cobalt	anr						
Copper	anr						
Gold							
Iron	anr						
Lead	93.9	100	93.9	80-120	87.3	91.7	95.2
Magnesium	anr						
Manganese	anr						
Molybdenum							
Nickel	anr						
Palladium							
Platinum							
Potassium	anr						
Selenium	anr						
Silicon							
Silver	anr						
Sodium	anr						
Strontium							
Thallium	anr						
Tin							
Titanium							
Tungsten							
Vanadium	anr						
Zinc	anr						
Zirconium							

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

13.2.3

13

## SERIAL DILUTION RESULTS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: ug/l

Prep Date: 06/11/13

Metal	MC21383-16 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Gold				
Iron	anr			
Lead	381	418	9.9	0-10
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Platinum				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			
Zirconium				

13.2.4  
**13**

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

13.2.4  
**13**

## POST DIGESTATE SPIKE SUMMARY

Login Number: JB38711  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: ug/l

Prep Date:

06/11/13

Metal	Sample ml	Final ml	MC21383-16 Raw	PS Corr.**	Spike ug/l	Spike ug/ml	Spike ug/l	% Rec	QC Limits
-------	--------------	-------------	-------------------	---------------	---------------	----------------	---------------	-------	--------------

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.5

13

POST DIGESTATE SPIKE SUMMARY

Login Number: JB38711

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21154  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

Associated samples MP21154: JB38711-1, JB38711-2, JB38711-3, JB38711-4, JB38711-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(\*\*) Corr. sample result = Raw \* (sample volume / final volume)

(anr) Analyte not requested

13.2.5

13



## General Chemistry

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### QC Data Summaries

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Percent Solids Raw Data Summary

## Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB38711

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

---

Sample: JB38711-1      Analyzed: 07-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI5\_MW-472\_1-2\_060413

Wet Weight (Total)	33.871	g
Tare Weight	25.858	g
Dry Weight (Total)	32.829	g
Solids, Percent	87	%

---

Sample: JB38711-2      Analyzed: 07-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI5\_MW-472\_7-8\_060413

Wet Weight (Total)	41.276	g
Tare Weight	29.211	g
Dry Weight (Total)	38.327	g
Solids, Percent	75.6	%

---

Sample: JB38711-3      Analyzed: 07-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI5\_MW-475\_2-4'\_060413

Wet Weight (Total)	44.654	g
Tare Weight	30.702	g
Dry Weight (Total)	42.45	g
Solids, Percent	84.2	%

---

Sample: JB38711-4      Analyzed: 07-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI5\_MW-471\_0-2'\_060413

Wet Weight (Total)	31.833	g
Tare Weight	21.874	g
Dry Weight (Total)	30.554	g
Solids, Percent	87.2	%

---

Sample: JB38711-5      Analyzed: 07-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI5\_MW-476\_6-7

Wet Weight (Total)	40.145	g
Tare Weight	26.215	g
Dry Weight (Total)	37.043	g
Solids, Percent	77.7	%

---



## General Chemistry

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### QC Data Summaries

---

Includes the following where applicable:

- Percent Solids Raw Data Summary

## Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB38711

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

---

Sample: JB38711-1      Analyzed: 07-JUN-13 by AMA  
ClientID: AOI5\_MW-472\_1-2\_060413

Method: SM21 2540 B MOD.

Wet Weight (Total)	33.871	g
Tare Weight	25.858	g
Dry Weight (Total)	32.829	g
Solids, Percent	87	%

---

Sample: JB38711-2      Analyzed: 07-JUN-13 by AMA  
ClientID: AOI5\_MW-472\_7-8\_060413

Method: SM21 2540 B MOD.

Wet Weight (Total)	41.276	g
Tare Weight	29.211	g
Dry Weight (Total)	38.327	g
Solids, Percent	75.6	%

---

Sample: JB38711-3      Analyzed: 07-JUN-13 by AMA  
ClientID: AOI5\_MW-475\_2-4'\_060413

Method: SM21 2540 B MOD.

Wet Weight (Total)	44.654	g
Tare Weight	30.702	g
Dry Weight (Total)	42.45	g
Solids, Percent	84.2	%

---

Sample: JB38711-4      Analyzed: 07-JUN-13 by AMA  
ClientID: AOI5\_MW-471\_0-2'\_060413

Method: SM21 2540 B MOD.

Wet Weight (Total)	31.833	g
Tare Weight	21.874	g
Dry Weight (Total)	30.554	g
Solids, Percent	87.2	%

---

Sample: JB38711-5      Analyzed: 07-JUN-13 by AMA  
ClientID: AOI5\_MW-476\_6-7

Method: SM21 2540 B MOD.

Wet Weight (Total)	40.145	g
Tare Weight	26.215	g
Dry Weight (Total)	37.043	g
Solids, Percent	77.7	%

---